

# **RSX-11M/M-PLUS**

## **System Management Guide**

Order No. AA-L679B-TC

Update Notice No. 1 (AD-L679B-T1)

RSX-11M Version 4.1  
RSX-11M-PLUS Version 2.1

First Printing, October 1979  
Revised, November 1981  
Revised, March 1982  
Updated, April 1983

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## UPDATE NOTICE NO. 1

### RSX-11M/M-PLUS System Management Guide

AD-L679B-T1

April 1983

Insert this Update Notice page in the *RSX-11M/M-PLUS System Management Guide* to maintain an up-to-date record of changes to the manual.

#### NEW AND CHANGED INFORMATION

This update reflects software changes and additions made in RSX-11M Version 4.1 and RSX-11M-PLUS Version 2.1.

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#### INSTRUCTIONS

Add the following pages to the *RSX-11M/M-PLUS System Management Guide* as replacements for or additions to current pages. The changes made on replacement pages are indicated in the outside margin by change bars (■) for additions and bullets (•) for deletions. If a page has a date at the bottom, but no change bars or delete bullets, all the text on that page is new.

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## SUMMARY OF TECHNICAL CHANGES

### SHUTUP Program

1. Messages include a DECnet node name or system name.
2. The NOBROADCAST bit is honored except during the last five minutes before shutdown.
3. The message "SHUTUP operation complete" is output before the system halts.
4. A task-build option lets you specify the time-out interval for [1,2]SHUTUP.CMD.

### User Environment Test Package (UETP)

1. You can specify devices to be excluded from testing.
2. You can determine how many times to run UETP.
3. You can select one or more of the five UETP tests.
4. UETP prints a message identifying the test and the time at the start and end of each test.
5. UETP searches for RSXMC.MAC.

### Virtual Monitor Console Routine (VMR)

VMR can now fix and unfix tasks in system-controlled partitions on mapped systems. Both the mapped and unmapped versions of VMR can be used to fix and unfix a task.

The following are new or revised commands for VMR:

FIX                   New keywords are:

/DIR	(RSX-11M-PLUS systems only.) Specifies that the task to be fixed is a directive common.
/NSF	(RSX-11M-PLUS systems only.) Specifies that the task to be fixed will be nonshuffleable.

INS                   New keywords are:

/CLI	Specifies that the task being installed is a command line interpreter (CLI).
/FIX	(RSX-11S systems only.) Specifies whether memory-resident tasks on RSX-11S will be fixed in memory.
/IOP	Specifies that a privileged task can overmap the I/O page.
/SEC	(RSX-11M-PLUS systems only.) Places in secondary pool the Task Control Block for the task being installed.



## SUMMARY OF TECHNICAL CHANGES

/SYNC (RSX-11M-PLUS multiprocessor systems only.) Synchronizes task use of a common region.

/XHR (RSX-11M-PLUS systems only.) Specifies that the Executive's copy of a task's header will be kept in an area external to the system's dynamic storage area (pool).

SAVE New keywords are:

/BOOT Allows a system saved on an RX02 to be booted on RX01 and vice versa.

/DENS Specifies 1600 bpi density for the following magnetic tapes: TE16, TU16, TU45, and TU77.

SET New or revised keywords are:

/ABAUD Enables autobaud detection for a terminal's remote dial-up line.

/BRO Specifies whether a terminal will receive messages from the MCR BROADCAST command.

/MAXEXT Establishes the maximum size to which a task can extend itself by means of the Executive EXTEND TASK directive.

/NETUIC Specifies the UIC in which DECnet-related tasks will be stored.

/OPT (RSX-11M-PLUS systems only.) Enables disk I/O queue optimization for a device.

/PLCTL Displays or sets the pool limit parameters used by the Pool Monitor Task (PMT).

/PUB Displays or sets a device public (/PUB) or nonpublic (/NOPUB).

/REMOTE Now allows the setting of the initial baud rate of a remote dial-up line for a terminal.

/RNDC Defines the length of the Executive round-robin scheduling interval.

/RNDH Defines the highest priority that will be considered for Executive round-robin scheduling.

/RNDL Defines the lowest priority that will be considered for Executive round-robin scheduling.

/SECPOL (RSX-11M-PLUS systems only.) Displays secondary pool use in the system.



## SUMMARY OF TECHNICAL CHANGES

/SWPC	Defines the length of a single Executive swapping interval.
/SWPR	Defines a priority range for Executive swapping.
/TERM	New terminal types allowed: LA12, LA34, LA38, LA100, VT101, VT102, VT105, VT125, VT131, and VT132.

### I/O Queue Optimization

A new chapter describes how RSX-11M-PLUS users can improve throughput of disk subsystems.

### Resource Accounting

The RSX-11M-PLUS Resource Accounting description contains the following new information:

1. You can specify that task accounting be performed.
2. You can convert a transaction file to one that is readable by DATATRIEVE-11. This allows you to write a resource accounting report program in DATATRIEVE-11.
3. You can collect device statistics for disk subsystems.





## THE I/O EXERCISER (IOX)

**4.1.2.3 How IOX Exercises DECTapes** - IOX exercises DECTapes by writing forward/reading forward, then writing reverse/reading reverse until the end of the tape is reached. IOX exercises DECTapes using a data buffer of two blocks (1024 bytes). You can set a test parameter only to determine the data pattern that IOX writes to the DECTape.

**4.1.2.4 Nonfile-Structured and File-Structured Volumes** - IOX exercises devices with two kinds of volumes: nonfile-structured (NFS) and file-structured (Files-11). The meanings of these terms may differ slightly from other manuals within the RSX-11M/M-PLUS set. In the context of the I/O Exerciser, they are defined as follows. All tapes are NFS volumes. (Throughout this chapter, the term "NFS" describes devices and the testing of devices that contain nonfile-structured volumes.) Disks can be either NFS or Files-11 volumes. Files-11 volumes are only those disks that have been initialized with the MCR INITIALIZE command and therefore have a home block and a Files-11 structure.

### 4.1.3 The Four Categories of IOX Commands

The IOX Command Language has four categories of commands:

#### Function Commands

Select devices for testing, deselect devices from testing, and initiate tasks to run in parallel with IOX.

#### Control Commands

Start and stop IOX processing, switch IOX modes of operation, and exit from IOX to the operating system monitor.

#### Display Commands

Display current default parameters, get help text for IOX commands, and display status and activity reports during an I/O exercise.

#### Parameter Commands

Set default parameters that affect how IOX tests the devices you select for testing.

Table 4-1 lists the IOX commands under their appropriate categories.

## THE I/O EXERCISER (IOX)

Table 4-1  
Four Categories of IOX Commands

Function	Control	Display	Parameter
DESELECT EXECUTE FILES11 SELECT VERIFY	ABORT CTRL/C EXIT PROCEED RESTART START	BADBLOCKS <sup>1</sup> CONFIGURE <sup>1</sup> DENSITY <sup>1</sup> HELP PARAMETERLIST PATTERN <sup>1</sup> PRINTSUMMARY RANGE <sup>1</sup> SPY	BADBLOCKS <sup>1</sup> BUFFERSIZE COMPAREDATA CONFIGURE <sup>1</sup> CONTROL_C DENSITY <sup>1</sup> ERRORLIMIT INTERLEAVE LOGFILE PATTERN <sup>1</sup> RANDOM RANGE <sup>1</sup> RECORDS REPORTERRORS RETRIES RUNTIME SUMMARYTIME TEMPORARYFILE VOLUMECHECK WAIT WRITECHECK

1. These commands have two forms: one that displays the current default for the parameter and one that sets the current default for the parameter.

### 4.2 INSTALLING AND INVOKING IOX

IOX is task built as a nonprivileged, checkpointable task that runs at a priority of 50 in the GEN partition. You can run IOX by using the MCR or DCL RUN command or by installing and invoking IOX.

#### 4.2.1 Installing IOX

Install IOX from a privileged terminal with the MCR or DCL INSTALL command.

For RSX-11M systems that do not support the Extend Task Directive (see the RSX-11M/M-PLUS Executive Reference Manual), install IOX with an increment large enough to accommodate all buffers. Assuming all initial IOX defaults, allocate 600. words per unit to be tested simultaneously. For example, to test three devices simultaneously, install IOX as follows:

```
>INS $IOX/INC=1800.
```

For RSX-11M systems that support the Extend Task Directive, install IOX without an increment.

For RSX-11M-PLUS systems, install IOX by typing:

```
>INS $IOX
```



## THE I/O EXERCISER (IOX)

### 4.2.2 Invoking IOX

You can invoke IOX from any terminal.

On RSX-11M single user systems, mount all disks that you want to exercise as file-structured disks. If you have a multiuser system, first allocate all units that you want to exercise. Then mount only those disks that you want to exercise as file-structured disks.

On RSX-11M-PLUS systems, allocate and mount all units that you want to exercise. Mount nonfile-structured volumes using the /FOREIGN switch for the MOUNT command.

4.2.2.1 Invoking an Installed Version of IOX - If IOX is installed, invoke it with the command:

```
>IOX
IOX>
```

IOX responds by prompting you with the name of the task that you assigned to IOX when you installed it. If you did not specify a task name when you installed IOX, its task name is ...IOX. After receiving the prompt, you can enter IOX commands.

4.2.2.2 Invoking IOX When It Is Not Installed - If IOX is not installed, invoke it with the MCR or DCL RUN command. In this case, IOX uses your terminal number to name the task and prompts you using this task name. For example, if from TT10: you type

```
>RUN $IOX
```

you will be prompted:

```
TT10>
```

When you receive this prompt, you can enter IOX commands.

For RSX-11M systems, if your system does not support the Extend Task Directive, then run the I/O Exerciser with an increment large enough to accommodate all buffers. Assuming all initial IOX defaults, allocate 600. words per device to be tested simultaneously. For example, to test four devices simultaneously, invoke IOX as follows:

```
>RUN $IOX/INC=2400.
```

When you invoke an uninstalled version of IOX on RSX-11M systems that support the Extend Task Directive, you do not need to run the task with an increment.

When you invoke an uninstalled version of IOX on RSX-11M-PLUS systems, you do not need to run the task with an increment.



## THE I/O EXERCISER (IOX)

### 4.3 USING INDIRECT COMMAND FILES WITH IOX

You can use indirect command files as input to IOX. IOX accepts one level of indirect command files. You can use indirect command files to set up your test configuration, choose devices for testing, set exercise parameters, and start and exit the exercise. You cannot interrupt an I/O exercise to enter IOX commands from an indirect command file. The default file type is "CMD."

For example, use an editor to create a file named TEST.CMD that contains the following IOX command sequence:

```
CONFIGURE DB2:      ; Adds DB2: to the test configuration.

FILES11 DB2:        ; Chooses DB2: for an exercise that preserves
                   ; the contents and structure of the disk.

RUNTIME 10          ; Sets an exercise parameter that runs
                   ; for 10 minutes.

START               ; Starts the exercise.

EXIT                ; Exits from IOX to the operating system
                   ; monitor when the exercise completes.
```

After you invoke IOX, type:

```
IOX>@TEST
```

IOX exercises DB2: (preserving its contents and structure) for 10 minutes and then exits to the operating system monitor.

### 4.4 SETTING UP YOUR TEST CONFIGURATION

Before you can exercise a unit, you must first include it in your test configuration. When you include a unit in your test configuration, IOX adds the unit to its list of units available for exercising and creates an empty data structure for the unit. IOX includes in the default test configuration one of each device type supported by DIGITAL as unit "0".

To add units to the test configuration, you use the CONFIGURE command. The syntax for this command is

```
CONFIGURE [ddnn:[=type]] ....
```

where

dd

Device mnemonic

nn

Device number

type

Device type. Either DISK or TAPE.

You can add any unit to the test configuration and assign a logical device name to it by using the MCR ASN (ASSIGN) command.



## THE I/O EXERCISER (IOX)

You use these commands with the SELECT command to set default parameters for exercising a unit with an NFS volume. You can use all but BADBLOCKS within the SELECT command line to override the current default settings for the device being selected.

Table 4-2 shows the parameters for exercising different types of devices.

Table 4-2  
Parameter Commands by Device Type for SELECT

NFS Disks	Cassettes	DECtapes	Magnetic Tapes
BADBLOCKS <sup>1</sup> BUFFERSIZE COMPAREDATA ERRORLIMIT INTERLEAVE RANDOM RANGE RETRIES VOLUMECHECK WRITECHECK	BUFFERSIZE COMPAREDATA ERRORLIMIT RECORDS	COMPAREDATA ERRORLIMIT	BUFFERSIZE ERRORLIMIT DENSITY RECORDS RETRIES

1. Cannot be used within SELECT command line.

**4.6.2.3 Parameter Commands for NFS Volumes with VERIFY** - The following commands affect the exercising of NFS disks that you select with the VERIFY command:

BADBLOCKS  
BUFFERSIZE  
ERRORLIMIT  
INTERLEAVE  
RANDOM  
RANGE  
RETRIES

You use these commands with the VERIFY command to set default parameters for testing a unit with an NFS disk. You can use all but BADBLOCKS within the VERIFY command line.

## 4.7 SETTING PARAMETERS FOR EXERCISING FILES-11 VOLUMES

This section shows you how to use IOX to exercise an RL02 with a Files-11 structure. Example 4-1 uses the following IOX commands:

### PARAMETERLIST

Displays current default parameters, IOX buffer space statistics, and device-dependent parameters for devices you have selected for testing.

# THE I/O EXERCISER (IOX)

## RUNTIME

Sets the length of time (in minutes) that IOX exercises the unit(s) you have selected for testing.

## FILES11

Selects a disk with a mounted Files-11 volume for an I/O exercise that preserves the contents and structure of the disk.

## TEMPORARYFILE

Sets the size of the temporary file that IOX uses for testing Files-11 disks with the FILES11 command.

## START

Starts exercising units that you have selected for testing.

### Example 4-1 Exercising an RL02 with the FILES11 Command

>ALL DL0:  
>MOU DL0: LOUIE  
>IOX

①  
②  
③

IOX>PARAMETERLIST

BUFFERSIZE= 1024.  
ERRORLIMIT= 10.  
INTERLEAVE= 4.  
PATTERN= 0.  
RECORDS= 1024.  
RUNTIME= 5.  
SUMMARYTIME= 1.  
TEMPORARYFILE= 500.

⑦  
⑧

COMPAREDATA= YES  
CONTROL C= YES  
LOGFILE= NO  
RANDOM= YES  
REPORTERRORS= YES  
RETRIES= YES  
VOLUMECHECK= YES  
WAIT= YES  
WRITECHECK= NO

④

Buffer space usage= 3290.:1924.:1924.:1.

IOX>RUNTIME 3  
IOX>FILES11 DL0: TEMP=800  
IOX>PARAMETER

⑤  
⑥

Device	Mode	Buffersize	Filesize/Records/Range	Parameters
DL0:	F11	512.	800. ⑩	COM RET RAN ERR=10. ⑨

BUFFERSIZE= 1024.  
ERRORLIMIT= 10.  
INTERLEAVE= 4.  
PATTERN= 0.  
RECORDS= 1024.  
RUNTIME= 3.  
SUMMARYTIME= 1.  
TEMPORARYFILE=500.

⑦  
⑧

COMPAREDATA= YES  
CONTROL C= YES  
LOGFILE= NO  
RANDOM= YES  
REPORTERRORS= YES  
RETRIES= YES  
VOLUMECHECK= YES  
WAIT= YES  
WRITECHECK= NO

Buffer space usage= 3290.:1308.:1308.:1.

IOX>START

⑪



## CHAPTER 6

### RESOURCE MONITORING DISPLAY (RMD)

The Resource Monitoring Display (RMD) is a privileged task that displays information about the resources in your system. This information includes the active tasks, their location in memory, the amount of memory they occupy, and available pool space. On video terminals such as VT52s and VT100s, RMD provides dynamic displays. On hardcopy terminals such as LA180s, RMD provides "snapshot" displays. RMD alters the display format according to terminal type without your having to set switches or rebuild the task.

#### 6.1 INTRODUCTION

RMD consists of "pages". A page consists of 24 lines, which, on CRT terminals, is one screen. The program contains two kinds of pages: display pages and setup pages.

##### 6.1.1 Display Pages

There are four display pages available on both RSX-11M and RSX-11M-PLUS systems:

- Memory (M)
- Active Task List (A)
- Task Header (T)
- Help (H)

There are two additional display pages that are available only on RSX-11M-PLUS systems:

- I/O Counts (I)
- System Statistics (S)

You press the terminal keys indicated in parentheses to switch display pages.

##### 6.1.2 Setup Pages

There are three setup pages. Each setup page is associated with a display page. (The Help Display Page has no associated setup page.) You access a setup page from a display page by pressing the ESCAPE key on your terminal. The setup page documents and prompts you for setup commands, which alter the content of the information displayed on the associated display page.



## 6.2 INSTALLING AND INVOKING RMD

Individual users can invoke RMD at their terminals. For large systems that support many terminals, you may want to run RMD continuously on a slaved terminal near the computer. You use different procedures to install and invoke RMD for use by individual users and to run RMD on a slaved terminal.

### 6.2.1 Using RMD at Individual Terminals

On RSX-11M systems, RMD is installed if you selected RMD at system generation.

On RSX-11M-PLUS, RMD is installed.

**6.2.1.1 Installing RMD for Use at Individual Terminals** - You must install RMD if you have removed it. To install RMD, use the MCR INSTALL command at a privileged terminal:

```
>INS $RMD
```

**6.2.1.2 Invoking RMD for Use at Individual Terminals** - From any terminal, you invoke an installed copy of RMD from MCR as follows:

```
>RMD [page][,setupcommand] . . .
```

**page**

One of the display page abbreviations (M, A, T, or H). The default page is the Memory Display (M).

**setupcommand**

A valid setup command for the display page that you have selected. The setup commands are the same as those available to you from the setup page associated with the display page you specified. The default setup commands are discussed in Sections 6.4 through 6.6, which describe the content of each display page and how you use setup commands to alter display parameters.

From a privileged terminal only, you can invoke an uninstalled copy of RMD using the MCR RUN command. However, MCR command line parsing is available only if RMD is installed.

### 6.2.2 Running RMD on a Slaved Terminal

To run RMD on a slaved terminal and also allow users to invoke RMD at their own terminals, RMD must be installed twice using different task image files and different task names.

On RSX-11M systems, if you selected RMD at system generation, you will find RMD.TSK, which has been task built at system generation with task name ...RMD, in SYSUIC on your system disk.



## RESOURCE MONITORING DISPLAY (RMD)

On RSX-11M-PLUS systems, you will find RMD.TSK, which has been task built at system generation with task name ...RMD, in SYSUIC on your system disk.

RMD.TSK is the copy of RMD that the system installs for individual users to invoke. LUNs 1 and 2 in this task image have been assigned to TI: so that a user at any terminal can invoke RMD.

To run RMD on a slaved terminal, do the following:

1. From a privileged terminal, make a copy of RMD.TSK in SYSUIC on your system disk named RMDEMO.TSK. If your SYSUIC is [1,54] and your system disk is DR0:, use the following command sequence:

```
>SET /UIC=[1,54]
>ASN DR0:=SY:
>PIP RMDEMO.TSK=RMD.TSK
```

2. Either from a privileged terminal or from a command file to be executed at a privileged terminal, install RMDEMO using the following command sequence:

```
>INS RMDEMO/TASK=RMDEMO
>REA RMDEMO 1 ttnn:
>REA RMDEMO 2 ttnn:
>SET /SLAVE=ttnn:
>RUN RMDEMO
```

where ttnn: is the terminal at which you want to run RMD.

This command sequence installs RMD with task name RMDEMO, reassigns LUNs 1 and 2 to the terminal you want to slave to the task, slaves the terminal, and invokes the task.

Because the REASSIGN command alters the task image on disk, you must use two task images rather than simply installing RMD twice with different task names.

### 6.3 THE HELP DISPLAY

The Help Display documents how you switch display pages. You switch display pages by pressing a terminal key as follows:

Key	Explanation
M	Accesses the Memory Display
A	Accesses the Active Task Display
T	Accesses the Task Header Display
I	Accesses the I/O Counts Display
S	Accesses the System Statistics Display

The Help Display also documents how to exit from RMD to MCR and use the ESCAPE key to access setup pages from their associated display pages. (Because there is nothing to alter on the Help Display, no setup page is available from the Help Display.)

The Memory, Active Task, and Task Header Displays use the entire screen. Therefore, you receive no prompts or documentation on display pages. To find out how to access a setup page from a display page or how to switch display pages, press the H key (for Help) to access the Help Display.



# RESOURCE MONITORING DISPLAY (RMD)

## 6.4 THE MEMORY DISPLAY

The Memory Display graphically represents the entire system memory, including the approximate size and locations of partitions and active tasks. The display also shows pool statistics, the name of the task that is currently executing, and other information about the status of your operating system. You access the Memory Display from another display page by pressing the M key (for Memory). To access the Memory Display from the MCR command line, you type:

>RMD M

If you invoke RMD without specifying a display page:

>RMD

RMD defaults to the Memory Display.

Figures 6-1 and 6-2 show "snapshots" of the Memory Display for RSX-11M and RSX-11M-PLUS respectively. The reverse numbers in each figure (white numbers in black circles) match the reverse numbers in the explanations that follow the two figures. Where a display field is the same for both RSX-11M and RSX-11M-PLUS, it is designated by the same reverse number in Figures 6-1 and 6-2. The matching explanation, however, appears only once.

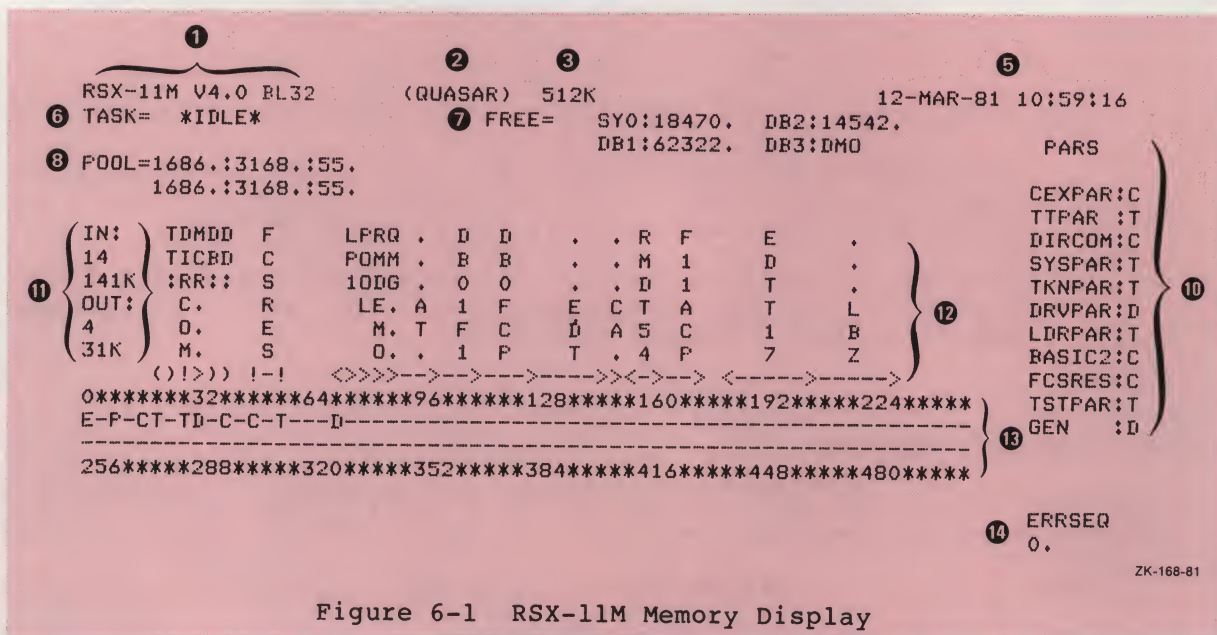


Figure 6-1 RSX-11M Memory Display



### RESOURCE MONITORING DISPLAY (RMD)

[illegible]

Figure 6-2 RSX-11M-PLUS Memory Display

- ① Operating system type, version number, and base level.
- ② Six-character name that is a DECnet node name (if DECnet is running on your system) or the system name that you selected in SYSGEN (if DECnet is not running on your system).
- ③ Size in K words of the system memory.
- ④ For RSX-11M-PLUS systems, time elapsed in units of days, hours, and minutes, since the system was last booted.
- ⑤ Current date and time.
- ⑥ Name of the task that is currently executing or, if none is executing, \*IDLE\* (Executive executing the idle loop).
- ⑦ Number of free blocks on the first four Files-11 devices in your system. If a device is dismounted, RMD displays: "DMO". If a device is off line, RMD displays: "OFL".



## RESOURCE MONITORING DISPLAY (RMD)

- ⑧ Pool (dynamic storage region) information in the format:

POOL=X:Y:Z

X

Number of words in the largest free block in pool

Y

Number of free words in pool

Z

Number of fragments in the pool free list

The second line records the worst case of pool since you invoked RMD. This line is most useful if RMD has been running on a slaved terminal since the system was last booted.

- ⑨ On RSX-11M-PLUS systems, secondary pool information in the format:

SECPPOOL=A:B:C%

A

Number of free blocks in secondary pool

B

Total number of blocks in secondary pool

C%

Percentage of secondary pool that is free

The second line records the worst case of secondary pool since you invoked RMD. This line is most useful if RMD has been running on a slaved terminal since the system was last booted.

- ⑩ Partitions in the system using the format:

partitionname:type

type

For RSX-11M systems (Figure 6-1), one of the following:

T Task partition  
S Subpartition  
D System-controlled (dynamic) partition  
C Common partition

For RSX-11M-PLUS systems (Figure 6-2), one of the following:

D System-controlled (dynamic) partition  
P Secondary pool partition

- ⑪ Number of tasks in memory and amount of memory they use, and number of active tasks swapped or checkpointed out of memory and the amount of memory they would require.



## RESOURCE MONITORING DISPLAY (RMD)

### 6.5.1 Altering the Active Task Display from the Setup Page

To alter the Active Task Display, you press the ESCAPE key, which displays the setup page for the Active Task Display. The setup page documents and prompts you for commands that you use to alter the Active Task Display. You can enter multiple commands after each prompt by using commas as separators. The setup commands available for altering the Active Task Display are:

- OWNER=ttnn: where ttnn: is the terminal that issued the task
- PRIORITY=p where p is a task's running priority
- RATE=s where s is the replot rate in seconds
- TASK=taskname where taskname is the name of the task whose header you want to display

You can truncate these commands to their shortest unique forms. These setup parameters stay in effect until you alter them, even if you switch to another display page and back to the Active Task Display.

**6.5.1.1 The OWNER Command** - This command allows RMD to display only those tasks that have been issued by a particular terminal. The default is ALL, which displays tasks issued from all terminals.

**6.5.1.2 The PRIORITY Command** - The active task list may be too long to fit on one screen. You use the PRIORITY command to determine the highest priority tasks that you want to see. The default is 250, the highest possible priority.

**6.5.1.3 The RATE Command** - This command allows you to determine how often RMD replots the Active Task Display, if you are running RMD on a CRT. The default replot rate is once per second.

**6.5.1.4 The TASK Command** - This command allows you to look at a specific task header. This command is an exception because it is the only setup command that switches display pages. There is no default for the TASK command. The Task Header Display is discussed in Section 6.6.

### 6.5.2 Altering the Active Task Display from the MCR Command Line

You can enter the same setup commands discussed in the previous section as part of the MCR command line. For example, when you enter the MCR command line:

```
>RMD A,PRIORITY=200,RATE=3
```

RMD displays the Active Task Display using 200 as the maximum task priority and replots the display every three seconds.

To display only those tasks issued by your terminal, type:

```
>RMD A,OWNER=TI:
```

## RESOURCE MONITORING DISPLAY (RMD)

### 6.6 THE TASK HEADER DISPLAY

The Task Header Display shows you the task header of the task you specify. You access this display from another display page by pressing the T key (for Task Header). If no task is currently specified, RMD shows you the setup page first so that you can specify the task whose task header you want RMD to display.

To access the Task Header Display from the MCR command line, you type:

```
>RMD T,TASK=taskname
```

where taskname is the name of the task whose header you want RMD to display.

If you invoke RMD from the MCR command line without specifying the name of a task:

```
>RMD T
```

RMD displays the setup page first so that you can specify the name of the task whose header you want RMD to display.

The Task Header Display shows you the following information about the specified task:

- Name of the task
- Name of the partition in which the task runs
- Status flags, which have the same mnemonics as in the Active Task display
- Owner of the task by terminal number
- Outstanding I/O count
- Default priority
- Running priority
- Swapping priority
- Length in decimal words
- Contents of the six general purpose registers, the program counter, and the Processor Status Word
- Contents of the Directive Status Word (\$DSW)
- Local event flags
- Logical unit number (LUN) assignments to a maximum of 26 LUNs

When RMD displays file names in the list of LUN assignments, the filename and UIC displayed are the filename and UIC of the file when it was created. If the file has been renamed, the RMD display may not reflect the current UIC and/or filename.



## RESOURCE MONITORING DISPLAY (RMD)

### 6.6.1 Altering the Task Header Display from the Setup Page

To alter the Task Header Display, you press the **ESCAPE** key, which displays the setup page for the Task Header Display. The setup page documents and prompts you for commands that alter the Task Header Display. You can enter multiple commands after each prompt by using commas as separators. The setup commands available for altering the Task Header Display are:

- **RATE=s** where **s** is the replot rate in seconds
- **TASK=taskname** where **taskname** is the name of the task whose header you want to display

You can truncate these commands to their shortest unique forms. These setup parameters remain in effect until you alter them, even if you switch to another display page and back to the Task Header Display.

**6.6.1.1 The RATE Command** - This command allows you to determine how often RMD replots the Task Header Display if you are running RMD on a CRT. The default replot rate is once per second.

**6.6.1.2 The TASK Command** - This command changes the task header to be displayed. There is no default. The **TASK** command has the same function as the **TASK** command on the Active Task Display, except that here it does not switch display pages.

### 6.6.2 Altering the Task Header Display from the MCR Command Line

Both the **RATE** and **TASK** commands are available to you from the MCR command line. If you invoke RMD using the following command line:

```
>RMD T,RATE=2,TASK=...EDT
```

RMD displays the Task Header Display for **EDT**, replotting the page every two seconds. You must give the full task name. In this case the taskname is **"...EDT"**, not **"EDT"**.

If you do not specify a task name in the MCR command line:

```
>RMD T,RATE=2
```

RMD first displays the setup page so that you can select a task whose header you want RMD to display. The replot rate will be set to two seconds.

## 6.7 DISPLAYS AVAILABLE ONLY ON RSX-11M-PLUS

Two displays are available only on **RSX-11M-PLUS** systems: the **I/O Counts Display** and the **System Statistics Display**. These displays are invoked by the commands **RMD I** and **RMS S**, respectively.



## RESOURCE MONITORING DISPLAY (RMD)

### 6.7.1 The I/O Counts Display

The I/O Counts display shows you I/O and error logging counts for up to six error logging devices. By default, the first six error logging devices in your hardware configuration are displayed. You access this display from another display by pressing the I key (for I/O). To access this display from the MCR command line, you type:

> RMD I

The I/O Counts Display has ten fields for each device:

- Device name of the displayed device
- Total number of I/O requests to the device
- Number of I/O requests issued to the device in the last second
- Average number of I/O requests issued to the device per second
- Average number of cylinders crossed per I/O request during the last second
- Average number of cylinders crossed per I/O request
- Number of words transferred during the last second
- Average number of words transferred per second
- Count and limit of soft I/O errors
- Count and limit of hard I/O errors

6.7.1.1 Altering the I/O Counts Display from the Setup Page - To alter the I/O Counts Display, you press the ESCAPE key, which displays the setup page for the I/O Counts Display. The setup page lists the available commands you can use to alter the I/O Counts Display, and prompts you for a command. You can enter multiple commands after each prompt by using commas as separators. The setup commands available for altering the I/O Counts Display are:

- DEVICEx=ddnn: where x is a number from 0 to 6 and ddnn: is an error logging device
- RATE=s where s is the replot rate in seconds

You can truncate these commands to their shortest unique forms. These setup parameters stay in effect until you alter them, even if you switch to another display page and then return to the I/O Counts Display.

6.7.1.1.1 The DEVICE Command - This command allows you to select which error logging devices are to be displayed. The device specified must be an error logging device. If you do not use the DEVICE command to specify a device or devices, the first six error logging devices in your hardware configuration are displayed by default. See the RSX-11M/M-PLUS Error Logging Manual for a list of the error logging devices.



## RESOURCE MONITORING DISPLAY (RMD)

6.7.1.1.2 **The RATE Command** - This command allows you to determine how often RMD replots the I/O Counts Display, if you are running RMD on a video display terminal. The default replot rate is once per second.

6.7.1.2 **Altering the I/O Counts Display from the MCR Command Line** - You can enter the DEVICE and RATE commands as part of the MCR command line. For example, when you enter the following command line, RMD displays I/O count information for DB3: and replots the display every two seconds:

```
> RMD I,DEVICE2=DR3:,RATE=2
```

The information for DR3: is displayed in the position that would normally display information for the third error logging device in your hardware configuration.

To change the first and second device display positions to DB1: and DB2:, respectively, use the following MCR command line:

```
> RMD I, DEVICE0=DB1:,DEVICE1=DB2:
```

These setup parameters stay in effect until you alter them by using setup commands from the setup page. Even if you switch to another display page, and then return to the I/O Counts Display, RMD does not restore the default parameters.

### 6.7.2 The System Statistics Display

The System Statistics Display shows you general information about the operation of your system. Much of this information comes from RSX-11M-PLUS Resource Accounting, so this display is only useful if Resource Accounting was included when your system was generated. You access this by pressing the S key. To access this display from the MCR command line, you type:

```
> RMD S
```

The display has 25 fields.

- Total number of tasks run
- Number of currently active tasks
- Total number of user logons
- Number of users currently logged on
- Total number of runs of the shuffler
- Error sequence count
- Pool information (in the same format as in the Memory Display)
- Secondary pool information (in the same format as in the Memory Display)
- Percentage of system memory used
- Percentage of system checkpoint files used



## RESOURCE MONITORING DISPLAY (RMD)

- Total number of directives issued
- Number of directives issued during the last second
- Average number of directives issued per second
- Total number of QIOs issued
- Number of QIOs issued during the last second
- Average number of QIOs issued per second
- Total number of running CPU ticks
- Number of running CPU ticks during the last second
- Average number of running CPU ticks per second
- Total number of zero CPU intervals
- Number of zero CPU intervals during the last second
- Average number of zero CPU intervals per second
- Total number of task checkpoints
- Number of task checkpoints during the last second
- Average number of task checkpoints per second

**6.7.2.1 Altering the System Statistics Display from the Setup Page -** You can alter the replot rate on the System Statistics Display by pressing the ESCAPE key, which displays the setup page for the System Statistics Display. The setup page lists the command format for altering the replot rate, and prompts you for a command. The command for altering the replot rate of the System Statistics Display is:

RATE=s where s is the replot rate in seconds

You can truncate this command to the single letter R. This setup parameter stays in effect until you alter it, even if you switch to another display page and then return to the System Statistics Display.

The default replot rate is once per second.

**6.7.2.2 Altering the System Statistics Display from the MCR Command Line -** You can enter the RATE command as part of the MCR command line. For example, when you enter the following MCR command line, RMD replots the System Statistics Display once every two seconds:

> RMD S,RATE=2

This setup parameter stays in effect until you alter it by using the RATE=n command from the setup page. Even if you switch to another display page and then return to the System Statistics Display, RMD does not restore the default replot rate.



## RESOURCE MONITORING DISPLAY (RMD)

### 6.8 MODIFYING THE TASK-BUILD COMMAND FILE

You can modify the task-build command file to change the defaults for RMD.

On RSX-11M systems, this file is LB:[1,24]RMDBLD.CMD for mapped systems and LB:[1,20]RMDBLD.CMD for unmapped systems.

On RSX-11M-PLUS systems, this file is LB:[1,24]RMDBLD.CMD.







## SETTING UP AND RUNNING THE QUEUE MANAGER

### Format

DCL>INITIALIZE/processorstype                    processorname[/qualifier]

MCR>QUE processorname:/SP[/sw[s]]

DCL Processor Types	MCR Function
---------------------	--------------

/PROCESSOR	/SP
/PRINTER	/SP
/DEVICE	/SP
/BATCH_PROCESSOR	/BA
/APPLICATIONS_PROCESSOR	/SP/EX

DCL Qualifiers	MCR Switches
----------------	--------------

/FLAG_PAGE:n	/FL:n
/LOWERCASE	/LOW
/UPPERCASE	/NOLO
/FORMS:n	/FO:n
/SHAREABLE	/SHR

### Processor Types

/PROCESSOR (/SP)  
/PRINTER (/SP)  
/DEVICE (/SP)

The DCL processor types fall in three groups. One group consists of /PROCESSOR, /PRINTER, and /DEVICE. These three are synonyms. The effect of each is the same. The synonyms are provided to assure unambiguous commands and documentation. Use /PRINTER for line printers and /DEVICE for other output devices.

If you use one of these three synonyms, a device-specific queue must exist before the output despooler task can be initialized. See Notes.

The MCR /SP switch performs the same function. There are no synonyms in the MCR form of this command. A device-specific queue must exist before the output despooler task can be initialized. See Notes.

/BATCH\_PROCESSOR (/BA)

Use this processor type (or option) when initializing a batch processor.

/APPLICATIONS\_PROCESSOR (/SP/EX)

Use this processor type when the destination of the output is not a physical device, but rather some software application. Use /APPLICATIONS\_PROCESSOR when you are initializing a user-written output despooler for which the physical device is not currently in the system. This makes it possible for the Queue Manager to despool output to an applications task, to a network, or to some other instance of down-line loading.

In MCR format, you must combine the /SP and /EX options.



## SETTING UP AND RUNNING THE QUEUE MANAGER

When you use this command in either form, the Queue Manager does not check for the existence of a physical device before initializing the processor.

### Parameter

processorname

Remember, the names of the device, processor, and queue are the same, and interchangeable. MCR users must include the colon ( : ) but DCL users can omit it.

You must initialize device-specific queues before you initialize the print processor with the same number.

If initializing a batch processor, its name must be in the form BAPn.

### ■ DCL Qualifiers and MCR Functions

These qualifiers and functions have meaning for initializing print processors only.

With the exception of setting the number of flag pages, these qualifiers have no effect on the printed output of the printer being initialized. Rather, these qualifiers define the kind of print jobs the processor can accept.

Different kinds of print jobs are established by the PRINT command which places them in the queue.

/FLAG\_PAGE:n (/FL:n)

Specifies how many flag pages are to precede jobs and files printed by this processor. Default is 0; n must be 0, 1, or 2.

If the processor is being initialized to accept special forms, you may want to set this qualifier to 0.

If you wish, you can change the value set here with the /FLAG qualifier to the START/ command (/FL switch to /STA option).

/LOWERCASE (/LOW)

If you initialize a printer as lowercase, that printer will accept print jobs with lowercase or uppercase specified in the PRINT command. Normally, you should not use this qualifier unless the hardware involved has both the uppercase and lowercase character sets.

/UPPERCASE (/NOLO)

If you initialize a printer as uppercase, that printer will not accept print jobs with lowercase specified in the PRINT command. Normally, you should not use this qualifier unless the hardware involved does not have the lowercase character set. This is the default.

/FORMS:n (/FO:n)

This number can be anything from 0 through 255. The default is 0.

These numbers are to be specified by your users in their PRINT commands.



## SETTING UP AND RUNNING THE QUEUE MANAGER

You should determine which forms will be used on your system and assign each a number. You should then edit the file LB:[1,24]LPPBLD.CMD to set up the forms table for the print processor to correspond to the numbers you have assigned to the forms. Then you must build the processor.

If the right forms are not in an available printer, then their jobs will be waiting until the printer has been stopped, the proper forms put in place, and the printer restarted with a new value for /FORMS (/FO).

Forms differ by their length and width. Both values can be set in the forms table.

Setting width is simply a matter of determining how many columns are needed to fill in the form. There are no standard widths for forms, but 80 and 132 are the most common.

Setting length requires you to determine whether your forms are of a standard length.

"Standard length" is any form length that can be set on your printing hardware. If the hardware can handle the form by setting a response to a form-feed character, then it is a standard length form, and the form feed is a "real," that is, hardware, form feed.

If the form length cannot be set on the hardware, then it is a nonstandard length. In this case, the form feed must be replaced by an appropriate number of line feeds. This is called a "simulated," that is, software, form feed.

The following table shows the forms requirements for a hypothetical installation. The form names describe different uses that special forms might be put to, but have no significance otherwise.

Form	Assigned n	Width	Length	Standard?
Accordion	0	132	66	Y
Paychecks	1	40	10	Y
Invoices	2	80	66	Y
Stationery	3	80	66	Y
Moon Diary	4	22	43	N
Star Log	5	112	113	N

The forms table can be changed at LB:[1,24]LPPBLD.CMD. This procedure is explained in the comments in this file.

As shipped, FORMS:0 is 66 lines long by 132 columns with real form feeds. FORMS:1 is 1 line long by 132 columns with simulated form feeds; FORMS:2 is 2 lines long by 132 columns with simulated form feeds; and so on through FORMS:66 which is 66 lines long by 132 columns with simulated form feeds. The remaining FORMS:n entries are set to 1 line long by 132 columns with simulated form feeds. Thus, if you specify /FORMS:43, when the printer encounters a form feed, it will count the number of lines on the page and subtract that number from 43. The printer will then reel off a number of line feeds equal to the difference. You may find this arrangement satisfactory if your installation rarely uses forms other than standard line-printer paper, but if you have more than one standard form, you will probably want to make the changes in the forms table entries.



## SETTING UP AND RUNNING THE QUEUE MANAGER

/SHAREABLE (/SHR)

Establishes the processor as shareable. This means the physical device is not "owned" by a processor if it is not printing a job. Normally, the output processor attaches the device when it is initialized and no other job can access the device until it is detached.

If you initialize the processor as shareable, the device is attached at the beginning of the QMG print job and detached at the end of the job, leaving the device free for other uses.

On RSX-11M-PLUS, if you initialize a processor as shareable, transparent spooling to that device will not work.

### Examples

DCL>INITIALIZE/PROCESSOR LP0:

MCR>QUE LP0:/SP

LP0: is set spooled. Jobs can be passed to it from the Queue Manager.

You must initialize a device-specific queue named LP0 before you can initialize the processor for device LP0:.

DCL>INITIALIZE/PRINTER LP1:/FLAG\_PAGE:2

MCR>QUE LP1:/SP/FL:2

This command initializes a print processor to control LP1: and specifies that jobs run on this printer will be preceded by two flag pages. Jobs specifying flag pages in the PRINT command will have two flag pages at the head of the job.

DCL>INITIALIZE/PRINTER LP1/NOLOWER

MCR>QUE LP1:/SP/NOLOW

This command initializes a print processor to control LP1: and states that the printer will only accept jobs specifying uppercase in the PRINT command.

DCL>INI/BATCH\_PROCESSOR BAP0

MCR>QUE BAP0:/BA

This command creates, names, and starts batch processor BAP0, on an RSX-11M-PLUS system.

DCL>INI/PRO LP0/FLAG:2/FORMS:0/LOWER

MCR>QUE LP0:/SP/FL:2/FO:0/LOW

This command creates, names, and starts print processor LP0. The printer has the lower-case character set. Jobs will have two flag pages when printed.



## SETTING UP AND RUNNING THE QUEUE MANAGER

### Notes

No more than 16 batch processors on an RSX-11M-PLUS system, or 16 print processors (including applications processors) can be initialized.

If you are initializing an output despooler that attaches a physical device, the system checks for the existence of the device and of its device-specific queue before the command is executed. Therefore, the following procedure must be followed.

1. The device must be part of the current system.
2. You must initialize a device-specific queue for the device before you initialize an output despooler of the same type and number.

When you initialize an output processor, it is named and started and has its device-specific queue assigned to it.

3. For each print processor, there must be a print queue, called the device-specific queue, with a corresponding name. The printer named LP0: is owned by the output despooler named LP0. There must also be a device-specific queue named LP0. The processor cannot be named until the device-specific queue has been initialized. This queue will be assigned automatically to the processor whose name it shares, but the device-specific queue can be deassigned and assigned elsewhere after initialization.

This procedure does not apply to initializing batch processors or applications processors. Neither a physical device nor a device-specific queue is needed to initialize a batch processor or applications processor.

There can also be print queues whose names do not correspond to output devices. These are called general queues.

The lowercase/uppercase attributes have no effect on the nature of the printer's output. They do not cause jobs to be printed all uppercase. These qualifiers set up a "mask" that must be matched by the attributes of print jobs before they can be sent to the printer. A printer without the lowercase character set can be initialized lowercase and it will accept print jobs with lowercase specified in the PRINT command. This might be done if a printer with the lowercase character set was temporarily unavailable. As a general rule, however, you should only initialize printers with the characteristics they actually have to avoid confusion.

(The line printer driver does, however, affect the printer's output, through lowercase-to-uppercase translation. See the discussion of SET /LOWER in the RSX-11M/RSX-11M-PLUS MCR Operations Manual, or the discussion of SET DEVICE /LOWER in the RSX-11M/M-PLUS Command Language Manual.)

### 7.2.2 DELETE/ (QUE /DEL)

You can delete queues or processors.



## SETTING UP AND RUNNING THE QUEUE MANAGER

7.2.2.1 DELETE/QUEUE (QUE /DEL:Q) - DELETE/QUEUE deletes queues by name.

### Formats

DCL>DELETE/QUEUE queueename/ERASE

MCR>QUE queueename:/DEL:Q

### Parameters

queueename/ERASE (/DEL:Q)

Specifies the name of a queue to be deleted. Only a privileged user can delete a queue using this parameter. The default queues BATCH and PRINT cannot be deleted.

If the queue has jobs in it, it will be marked for delete. When the last job leaves the queue, the queue itself is deleted. No new jobs can be entered.

You cannot delete device-specific queues until after you have deleted the processor with the same number. See next section.

### Examples

DCL>DELETE/QUEUE MONA/ERASE

MCR>QUE MONA:/DEL:Q

This privileged command deletes the queue named MONA if it is empty. If the queue has entries, it is marked for delete, and will be deleted as soon as the last job is removed from the queue. Note the colon in the queue name in the MCR example.

7.2.2.2 DELETE/PROCESSOR (QUE /UNSP) - DELETE/PROCESSOR deletes print processors, output despoolers, or batch processors by name. The command also sets the device unspooled.

### Format

! DCL>DELETE/processorname processorname

• MCR>QUE processorname:/UNSP

DCL Processor Types	MCR Functions
/PROCESSOR	/UNSP
/PRINTER	/UNSP
/DEVICE	/UNSP
/BATCH PROCESSOR	/UNBA
/APPLICATIONS_PROCESSOR	/UNSP

### Parameters

processorname

For physical devices, the name of the processor is identical with the name of the physical device. Thus, the device LPl: is



## SETTING UP AND RUNNING THE QUEUE MANAGER

controlled by processor LP1:. DCL commands do not require that you include the colon (:), but you must include the colon in all MCR commands.

Batch processors have names in the form BAPnnn, where nnn is from one through three Radix-50 characters.

Applications processors have names of six Radix-50 characters.

### Processor Types

/PROCESSOR (/UNSP)  
/PRINTER  
/DEVICE

The DCL processor types fall in three groups. One group consists of /PROCESSOR, /PRINTER, and /DEVICE. These three are synonyms. The effect of each is the same. The synonyms are provided to assure unambiguous commands and documentation. Use /PRINTER for line printers and /DEVICE for other output devices.

If you use one of these three synonyms, the device-specific queue cannot be deleted until after the output despooler task is deleted.

These distinctions do not apply in MCR.

/BATCH\_PROCESSOR (/UNBA)

Use this processor type when deleting a batch processor.

/APPLICATIONS\_PROCESSOR (/UNSP)

Use this processor type when the destination of the output is not a physical device, but rather some software application. Use /APPLICATIONS\_PROCESSOR when you are deleting a user-written output despooler.

### Examples

DCL>DELETE/PROCESSOR LP0

MCR>QUE LP0:/UNSP

This example deletes processor LP0, the owner of line printer LP0:.

DCL>DELETE/BATCH\_PROCESSOR BAP2

MCR>QUE BAP2:/UNBA

The commands are equivalent; they delete the batch processor named BAP2, on an RSX-11M-PLUS system. Note the colon in the MCR command.

DCL>DELETE/PROCESSOR LP0  
DCL>DELETE/QUEUE LP0/ERASE

MCR>QUE LP0:/UNSP  
MCR>QUE LP0:/DEL:Q

This example shows the order you must follow to delete a device-specific queue.



## SETTING UP AND RUNNING THE QUEUE MANAGER

### Notes

DELETE/PROCESSOR (/UNSP) counteracts INITIALIZE/PROCESSOR (/SP).

For maximum clarity, operators using DCL should use the specific qualifiers /PRINTER and /DEVICE rather than the synonym /PROCESSOR when deleting output despoolers.

### 7.2.3 ASSIGN/QUEUE (QUE /AS:)

ASSIGN/QUEUE (QUE /AS:) establishes a path from a queue to a processor.

#### Format

DCL>ASSIGN/QUEUE queueName processorName

MCR>QUE processorName:/AS:queueName

#### Parameters

queueName

Specifies the queue that is to be assigned to the processor.

processorName

Specifies the processor to which the queue is to be assigned.

When assigning queues to output devices, use the device name in the form ddn:.

### Notes

This command can be used to redirect output from one processor to another.

Other uses include grouping related processors, such as plotters, under a single queue.

### 7.2.4 DEASSIGN/QUEUE (QUE /DEA)

DEASSIGN/QUEUE (QUE /DEA) counteracts ASSIGN/QUEUE (/AS). It is used to eliminate the path from a queue to a processor.

#### Format

DCL>DEASSIGN/QUEUE queueName processorName

MCR>QUE processorName:/DEA:queueName

#### Parameters

queueName

Specifies the queue that is to be deassigned from the processor.



## SETTING UP AND RUNNING THE QUEUE MANAGER

### processorname

Specifies the processor from which the queue is to be deassigned.

When deassigning queues from output devices, use the device name in the form ddnn:.

### 7.2.5 STOP/ (QUE /STO)

STOP/ (/STO) is used to stop queues, the Queue Manager, or a processor.

#### 7.2.5.1 STOP/QUEUE (QUE /STO:QUE) - STOP/QUEUE stops queues.

##### Format

DCL>STOP/QUEUE queueename

MCR>QUE queueename:/STO:QUE

##### Parameter

##### queueename

Specifies the queue to be stopped. Following the command, no jobs will be taken from the queue, but jobs can still be added to the queue.

If a job is active at the time this command is issued, the job will be allowed to complete processing but no further jobs will be dequeued.

Note the colon (:) in the MCR form of the command.

#### 7.2.5.2 STOP/QUEUE/MANAGER (/STO:QMG) - STOP/QUEUE/MANAGER (/STO:QMG) stops the Queue Manager and deletes all processors, whether batch processors or output despoolers.

##### Format

DCL>STOP/QUEUE/MANAGER[/ABORT]

MCR>QUE /STO:QMG[:AB]

##### Notes

If you issue this command without the /ABORT (:AB) qualifier, QMG is marked for stop. As soon as all currently active jobs on all processors are done, QMG will stop. No more jobs can be entered in the queue. See also example in Section 7.2.6.2.

If you include the /ABORT (:AB) qualifier, all active jobs are held immediately and QMG exits without further delay.



## SETTING UP AND RUNNING THE QUEUE MANAGER

7.2.5.3 **STOP/PROCESSOR (QUE /STO)** - STOP/PROCESSOR (/STO) stops a processor.

### Format

■ DCL>STOP/processorname processorname[/qualifier]

• MCR>QUE processorname:/STO[:opt]

DCL Processor Types	MCR Functions
/PROCESSOR	/STO
/PRINTER	/STO
/DEVICE	/STO
/APPLICATIONS_PROCESSOR	/STO
/BATCH_PROCESSOR	/STO

DCL Parameter Qualifiers	MCR Options
/PAUSE	<no equivalent>
/JOB_END	:EOJ
/FILE_END	:EOF
/ABORT	:AB

### Parameter

processorname

When stopping print processors, use the device name in the form ddnn:.

This command has no effect on the status of jobs in queues, but no jobs will be dequeued while the processor is stopped.

### ■ Processor Types

/PROCESSOR (/STO)  
/PRINTER  
/DEVICE

- The DCL processor types are synonyms. The effect of each is the same. These synonyms are provided to assure unambiguous commands and documentation. Use /PRINTER for line printers, /DEVICE for other output devices, and /BATCH\_PROCESSOR for batch processors. MCR users use /STO across the board.

/BATCH\_PROCESSOR (/STO)

- Use this processor type when stopping a batch processor.

/APPLICATIONS\_PROCESSOR (/STO)

- Use this processor type when the destination of the output is not a physical device, but rather some software application. Use /APPLICATIONS\_PROCESSOR when you are stopping a user-written output despooler.



## SETTING UP AND RUNNING THE QUEUE MANAGER

### Qualifiers

Only one qualifier is permitted. The choice of qualifier here affects the restarting of jobs when the processor is started again.

`/PAUSE <no equivalent>`

This is the default; it causes the processor to stop at the end of the current line. There is no MCR qualifier; `/STO` is sufficient.

`/JOB_END (:EOJ)`

Causes the processor to stop at end of the current job.

`/FILE_END (:EOF)`

Causes the processor to stop at end of the current file.

`/ABORT (:AB)`

Causes the processor to stop immediately. The current job is held in its queue.

### Notes

This command is counteracted by `START/PROCESSOR (/STA)`. You cannot issue `START/PROCESSOR (/STA)` until the processor actually stops.

**7.2.5.4 STOP/ABORT (QUE /KIL)** - `STOP/ABORT (/KIL)` deletes the active job on a given processor. Privileged users can delete any job; nonprivileged users can delete their own jobs. You do not need to know the queue name or job name to delete the job, only the name of the processor.

### Format

`DCL>STOP/ABORT processorname`

`MCR>QUE processorname:/KIL`

`processorname`

Specifies the processor whose active job you wish to delete. Note that the MCR command format requires a colon (:) after the processor name.

You can stop jobs running on any processor under the control of QMG, including RSX-11M-PLUS batch processors.

### Examples

`DCL>STOP/ABORT`  
`Processor? LP0`

This example shows how to stop a print job on LP0: The currently active job is deleted from the queue and the next eligible job is queued.



## SETTING UP AND RUNNING THE QUEUE MANAGER

### Notes

Use this command to stop a processor fast, such as a line printer printing nothing but form feeds.

As soon as the active job is deleted, QMG passes the next eligible job to the processor. The processor has not been aborted or killed, only the active job on that processor.

You can also delete the active job on a card-reader processor with this command.

### 7.2.6 START/ (QUE /STA)

START/ (QUE /STA) is used to start a queue, the Queue Manager, or a processor. START/ (QUE /STA) counteracts STOP/ (/STO).

#### 7.2.6.1 START/QUEUE (QUE /STA) - START/QUEUE (QUE /STA) starts a queue.

##### Format

DCL>START/QUEUE queueename

MCR>QUE queueename:/STA

##### Parameter

queueename

Specifies the queue to be started. This command starts a queue that has been stopped. Note the colon (:) in the MCR format.

#### 7.2.6.2 START/QUEUE/MANAGER (QUE /STA:QMG) - START/QUEUE/MANAGER (QUE /STA:QMG) starts the Queue Manager, initializes the default queues PRINT and BATCH, and creates the queue file LB0:[1,7]QUEUE.SYS if it does not exist. The command also clears all queue assignments. If the queue file was intact, all queues will still contain their jobs, but will not be assigned to processors.

##### Format

DCL>START/QUEUE/MANAGER

MCR>QUE /STA:QMG

##### Examples

DCL>START/QUEUE/MANAGER

MCR>QUE /STA:QMG

Starts Queue Manager. Initializes the default queues PRINT and BATCH, if they are not already initialized. Clears all assignments of queues to processors.



## SETTING UP AND RUNNING THE QUEUE MANAGER

Any jobs that were active at the time the Queue Manager was stopped will be held when it is started again. All other jobs retain the status they had when QMG was stopped.

All processors must be reinitialized.

The default queue BATCH is initialized on RSX-11M systems as well as RSX-11M-PLUS, but it is neither accessible nor displayed.

```
DCL>STOP/QUEUE/MANAGER
```

```
MCR>QUE /STO:QMG
```

With this command, the Queue Manager is stopped, and all processors are deleted.

```
DCL>START/QUEUE/MANAGER
```

```
MCR>QUE /STA:QMG
```

This command clears all assignments of queues to processors.

```
DCL>INITIALIZE/PRINTER LP0
```

```
DCL>INITIALIZE/PRINTER LP1
```

```
DCL>INITIALIZE/BATCH_PROCESSOR BAP0
```

```
DCL>INITIALIZE/BATCH_PROCESSOR BAP1
```

```
DCL>ASSIGN/QUEUE PRINT LP0
```

```
DCL>ASSIGN/QUEUE PRINT LP1
```

```
DCL>ASSIGN/QUEUE BATCH BAP0
```

```
DCL>ASSIGN/QUEUE BATCH BAP1
```

```
MCR>QUE LP0:/SP
```

```
MCR>QUE LP1:/SP
```

```
MCR>QUE BAP0:/BA
```

```
MCR>QUE BAP1:/BA
```

```
MCR>QUE LP0:/AS:PRINT
```

```
MCR>QUE LP1:/AS:PRINT
```

```
MCR>QUE BAP0:/AS:BATCH
```

```
MCR>QUE BAP1:/AS:BATCH
```

These commands recreate the network of queues and processors. **Note** that RSX-11M systems have no batch processors.

```
DCL>RELEASE/JOB PRINT BOBO
```

```
MCR>QUE PRINT:BOBO/REL
```

This command releases a held job that was active at the time the system crashed.

**7.2.6.3 START/PROCESSOR (QUE /STA) - START/PROCESSOR (QUE /STA)** starts a batch processor or output despooler.

### Format

```
DCL>START/processorname processorname [/qualifier[s]]
```



## SETTING UP AND RUNNING THE QUEUE MANAGER

### DCL Processor Types

/PROCESSOR  
/PRINTER  
/DEVICE  
/BATCH PROCESSOR  
/APPLICATIONS\_PROCESSOR

### DCL Qualifiers

/FORMS:n  
/FLAG:n  
/CONTINUE  
/RESTART  
/NEXT JOB  
/TOP OF FILE  
/BACKSPACE:n  
/FORWARDSPACE:n  
/AT PAGE:n  
/ALIGN

MCR>QUE processorname:/STA[:opt[s]]

### MCR Options

/FO:n  
/FL:n  
<no equivalent>  
:NE  
:RES  
:PA:0  
:BA:n  
:FW:n  
:PA:n  
/AL

### Parameters

processorname  
ddnn:

Specifies the processor to be started. When starting a stopped output processor, use the device name in the form ddnn:.

### Processor Types

/PROCESSOR  
/PRINTER  
/DEVICE  
/BATCH PROCESSOR  
/APPLICATIONS\_PROCESSOR

These are DCL synonyms. The effect of each is the same. These synonyms are provided to assure unambiguous commands and documentation. Use /PRINTER for line printers, /DEVICE for other output devices, /BATCH PROCESSOR for batch processors, and /APPLICATIONS\_PROCESSOR for applications processors. In MCR format, use the /STA option.

### Qualifiers

Some qualifiers have meaning for starting either batch or print processors, and some have meaning for print processors only. See descriptive text.

This field is restricted. You can include either /FORMS: (/FO:) or /FLAG: (/FL:) or both, or you can include any one of the remaining qualifiers, if permitted.

/FORMS: (/FO:) and /FLAG: (/FL:) have meaning for print processors only.



## SETTING UP AND RUNNING THE QUEUE MANAGER

### /FORMS:n (/FO:n)

Overrides the forms value set when the processor was initialized. n can be any number from 0 through 256.

### /FLAG:n (/FL:n)

Overrides the flag value set when the processor was initialized.

When the processor starts again, the Queue Manager sends the next job that matches the attributes of the processor.

### /CONTINUE

Specifies that the processor carry on from wherever it was stopped. This is the default. MCR format requires no switch.

### /RESTART (:RES)

Specifies that interrupted jobs be restarted from the beginning of the file that was being processed when the processor was stopped. This qualifier affects only jobs that were ACTIVE at the time the processor stopped.

This qualifier may conflict with the desires of your users who have specified /NORESTART in their PRINT or SUBMIT commands. This qualifier causes such jobs to be restarted at the start of the file being processed when the processor was stopped. You should check the queue display for such jobs before using this qualifier. The /CONTINUE (default) qualifier will not affect such jobs.

The action of this qualifier further depends on the qualifier to the STOP/ (/STO) command that stopped the processor in the first place.

If the qualifier was /PAUSE (the default for /STO), then any jobs active at that time will be restarted at their beginning.

If the qualifier was /FILE END (:EOF), then any jobs active at that time will be restarted at their beginning, unless the active file was the last one in the job.

If the qualifier was /ABORT (:AB) (or if the system crashed), the current active job was held in its queue, so the restart qualifier will have no effect.

Likewise, if the qualifier was /JOB END, (:EOJ) there will have been no current job, so the restart qualifier will have no effect.

### /NEXT\_JOB (:NE)

Specifies that the processor start at the beginning of the next job.

### /TOP\_OF\_FILE (:PA:0)

Specifies that the processor start at the top of the current file in the current job.

The qualifiers /CONTINUE (the default for /STA), /RESTART (/RES), /NEXT\_JOB (/NE), and /TOP\_OF\_FILE (PA:0) are appropriate for both print and batch processors.



## SETTING UP AND RUNNING THE QUEUE MANAGER

/BACKSPACE:n (:BA:n)

Specifies that the processor start n pages back in the current job.

/FORWARDSPACE:n (:FW:n)

Specifies that the processor start n pages forward in the current job.

/PAGE:n (:PA:n)

Specifies that the processor start at specified page in the job that was active when the processor was stopped.

These page-related qualifiers have meaning for print processors only. They will have no effect unless the user specified a page length qualifier in the PRINT command.

/ALIGN (:AL)

Informs the print processor that the paper in the line printer is currently at the top of a form. It is used when you have stopped the print processor to change forms. The print processor maintains a count of how many lines it has gone down on a form. The /ALIGN (/AL) qualifier clears that count for new forms.

### Examples

```
DCL>START/PRINTER LP0
```

```
MCR>QUE LP0:/STA
```

This example starts print processor LP0:. Printing continues from the point at which it was stopped.

```
DCL>START/PRINTER LP0/FLAG:2
```

```
MCR>QUE LP0:/STA/FL:2
```

This example starts print processor LP0:. The processor will put two flag pages at the head of the job and at the head of each file if the user specifies flag pages in a PRINT command.

```
DCL>START/BATCH_PROCESSOR BAP0
```

```
MCR>QUE BAP0:/STA
```

This example starts batch processor BAP0. Batch processing continues from the point at which it was stopped.

```
DCL>START/BATCH BAP0/CONTINUE
```

```
MCR>QUE BAP0:/STA
```

The two examples are equivalent.



## USER ENVIRONMENT TEST PACKAGE (UETP)

### 9.1.4 The MCR Command Test

This module tests some of the MCR disk-access commands: ALL, DEA, MOU, DMO, INI, UFD, and VFY and the BAD utility.

### 9.1.5 The Interactive Utilities Test

This test invokes EDI, EDT, ZAP, and ACNT. You must be present at the terminal from which the UETP is running to exit from the interactive utilities that this test module invokes.

## 9.2 OPERATING ENVIRONMENT

You run UETP following system generation. To ensure the integrity of the testing, UETP should have unlimited access to all system features and devices. You should therefore run UETP on a stand-alone basis for two reasons: (1) users may change the state of the system, thereby invalidating or modifying the results of UETP and (2) UETP puts a heavy load on the system, which may interfere with other work on the system.

To run the UETP, you need only one terminal. It must be a privileged terminal. It is best to run the program from a hard-copy terminal so that you have a record of any error messages generated during the execution of UETP. If you have a second terminal that is a CRT terminal, you can use it to run the Memory Display of RMD which monitors how the system memory is being allocated while UETP is executing. This is particularly useful during the Load Test.

For RSX-11M systems, the command files that comprise UETP are located in UFD[2,300] on one of the disks in your system as follows:

Disk Type	Volume Label
Big Disks	
RP04/05/06	RSXM32
RM02/03	RSXM32
RK06/07	CLISRC
RL01/RL02	HLPDCL
RK05	HLPSYS

For RSX-11M-PLUS systems, the command files that comprise UETP are located in UFD[2,300] on the disk labeled RSX11MPBL10.

For RSX-11M systems on RL01/RL02 and RK05 kits, you must have completed SYSGEN Phase III to build the nonprivileged tasks that you want UETP to test. These tasks are tested in the Utilities Test, the MCR Command Test, and the Interactive Utilities Test (see Sections 9.1.3 through 9.1.5 for a list of these tasks). You must have also built IOX if you want to run the I/O Exerciser Test.

To run the Utilities Test, you must have a scratch disk or DECTape. To run the MCR Command Test, you must have a scratch disk. To run the DSC in the MCR Command Test module, you must have a floppy disk or DECTape.

The utilities BAD, TKB, and MAC must be present on the system disk or already installed for UETP to run.



## USER ENVIRONMENT TEST PACKAGE (UETP)

### 9.3 OPERATING PROCEDURES

Before running the UETP, create the necessary operating environment as described in Section 9.2. After you log in on the privileged terminal from which you wish to run UETP do the following:

1. Place scratch media on all DEctape, cassette, floppy, and magnetic tape drives that you want to test. Place initialized Files-11 disk packs on all disk drives that you want to test. The I/O Exerciser Test destroys data on the nonfile-structured disks and tapes; therefore you must use scratch media. IOX does not destroy data on Files-11 hard disks; therefore they need not be scratch disks.

2. Assign your system disk to LB: by typing

```
>ASN ddnn:=LB:
```

```
ddnn:
```

Logical device name of your system disk.

3. For RSX-11M systems that do not have a big disk, the system disk and the disk containing the UETP files are not the same. If your system disk has enough free blocks to accommodate all the UETP command files plus 300 to 400 additional blocks for files that UETP creates, then you may want to copy the UETP files to your system disk.

Assign the disk that contains the UETP files to SY: by typing

```
>ASN ddnn:=SY:
```

```
ddnn:
```

Logical device name of the disk that contains the UETP files.

4. Allocate checkpoint space for the system. You need two blocks for each 1K bytes of memory on your system.

```
>ACS SY:/BLKS=512.
```

5. Execute the UETP.CMD command file by typing

```
>@[2,300]UETP
```

### 9.4 ERROR REPORTING

Tasks that detect errors may output error messages to your terminal. IOX does its own error reporting. Tasks that run during the MCR Command Test, the Utilities Test, and the Interactive Utilities Test output their own error messages.



## CHAPTER 10

### VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

The Virtual Monitor Console Routine (VMR) programs are privileged system tasks on RSX-11M and RSX-11M-PLUS that allow you to configure an RSX-11M or RSX-11M-PLUS system image file, respectively. VMR allows you to issue Monitor Console Routine (MCR) commands that are directed to the disk image of a system rather than to the current running system. The system image file that you configure using VMR can later be booted.

VMR supports a number of MCR commands described in the RSX-11M/M-PLUS MCR Operations Manual. With the exception of the SAVE command, VMR commands have the same syntax and semantics as their MCR counterparts.

Error messages for VMR are given in Section 10.6.

#### 10.1 STARTING VMR

You can start VMR four ways. The first three methods apply when you have installed VMR and it is ready to be executed. The fourth method installs VMR automatically, executes it, and then removes it on exit.

##### Method 1:

```
>VMR @indirect
```

The system loads VMR and executes the specified indirect command file. VMR then exits.

##### Method 2:

```
>VMR
```

The system loads VMR, and VMR responds with the following prompt:

```
ENTER FILENAME:
```

##### Method 3:

```
>RUN VMR
```

The system loads VMR, and VMR responds with the following prompt:

```
ENTER FILENAME:
```



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

### Method 4:

>RUN \$VMR

The system installs VMR from the pseudo device LB: under the system UFD (normally, [1,50] for unmapped systems and [1,54] for mapped systems) and loads it. VMR then responds with the following prompt:

ENTER FILENAME:

In all starting methods except Method 1, VMR prompts

ENTER FILENAME:

At this point, you specify the file that contains the image of the RSX-11M or RSX-11M-PLUS system you want to modify.

VMR expects to find a symbol definition file of the same name as that of the system image file, but with a file type of .STB, on the same device and under the same UFD as those of the system image file (except when you use the /IM switch; see Section 10.2). For example, suppose you enter the following file specification in response to the prompt:

RSX11M.SYS

A corresponding file, RSX11M.STB, must exist that contains the symbol definitions for the RSX11M.SYS system image.

### NOTE

If the system image file you wish to modify is not on the device assigned as SY: and LB:, you must assign both SY: and LB: to the system image file's physical device.

The system image and symbol definition files are in the standard format produced by the RSX-11M/M-PLUS Task Builder.

Upon receiving a valid file specification, VMR opens and reads the symbol definition file. It also opens the system image file and verifies that the file is actually a system image.

On RSX-11M-PLUS, if the system image file you specify does not have Executive data space support, VMR prompts with:

VMR>

If the system image file you specify does have Executive data space support, VMR loads the data space and prints the following message:

Loading Executive data space  
Data space loading completed

VMR then prompts with:

VMR>



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

You can now enter any valid VMR command or terminate VMR by typing CTRL/Z.

If you used Method 1 to start VMR, the first line in the specified indirect command file must contain a file specification for the system image file that is to be modified.

In addition to specifying an indirect command file to start VMR, you can also enter the following any time that VMR prompts for input:

@filespecification

This directs VMR to extract command input from the specified file until it reaches an end-of-file and then to return to the terminal for further input. This feature of VMR is useful when you want to repeat a series of commands for several generated systems (INSTALL commands, for example).

VMR allows two levels of indirect command files. This means you can invoke a second command file from within the first file. Trying to invoke another file from within the second file results in an error message.

### 10.2 VMR FILE SPECIFICATIONS

VMR accepts the standard RSX-11M/M-PLUS file specification format:

ddnn:[g,m]filename.type;ver[/IM]

ddnn:

The device unit on which the volume containing the desired file resides (for example, DM0: or DT1:). The name consists of two ASCII characters, followed by an optional 1- or 2-digit octal unit number. The default device is SY0:.

[g,m]

The UFD in which the file is listed. The variables g and m are octal numbers from 1 to 377 that represent the file owner's group and member number, respectively. The brackets are a mandatory part of the UFD syntax. The default is the UIC under which VMR is running.

filename

The name of the file. An RSX-11M/M-PLUS file name can consist of up to nine alphanumeric characters. The file name and file type are always separated by a period (.). You must specify the file name. No default is applied.

type

The file type, consisting of up to three alphanumeric characters. The file type and version number are always separated by a semicolon (;). The defaults are .SYS for system image files, .TSK for task image files, and .CMD for indirect command files.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

ver

The version number in the range of 0 through 77777(8). The default is the highest version in the UFD.

/IM

A switch that, when applied to the system image file specification, overrides the VMR requirement for the symbol definition file. When you use the /IM switch with the file specification, the only command VMR will accept is the SAVE command.

This is the only switch provided with VMR. You use it to write non-RSX-11M/M-PLUS system images to secondary media in bootstrappable format. The switch is also useful when you use an RSX-11M/M-PLUS system as a host system for developing small, memory-resident systems that must be loaded from a serial medium (such as paper tape).

### 10.3 COMMAND SYNTAX

You do not have to give an entire command name to VMR. VMR accepts three characters and then searches for a space or tab followed by the command parameters or by a RETURN if there are no parameters. Because VMR requires a space or a tab preceding parameters, VMR does not allow embedded spaces in a command name. If you enter a command incorrectly, VMR displays an error message at your terminal.

The following example illustrates the format of the TIME command. Note that the square brackets in the example indicate that the "E" is optional:

```
VMR>TIM[E] (RET)
```

#### 10.3.1 Keywords

Some commands use keywords that apply to the command argument. A keyword consists of a slash (/), followed by an alphanumeric identification, and, optionally, followed by an equal sign (=) and the value of the keyword, as follows:

/keyword=value

You can enter keywords in any order. For example, the INSTALL command requires a file name parameter specifying the task to be installed. You can append keywords to the file name. One such keyword, /TASK, specifies the name under which the task is to be installed.

```
VMR>INS TEST.TSK/TASK=SUPER
```

This command line causes the task contained in the file named TEST.TSK to be installed with the name SUPER. Keywords are command-specific and are defined with each command (Section 10.5).



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### 10.3.2 Comments

VMR treats a line of text as a comment if the first character in the line is a semicolon (;). In addition, you can use the exclamation mark (!) to delimit comments within a command line. The first exclamation mark starts the comment and the next exclamation mark or RETURN terminates the comment. VMR ignores all text between the two exclamation marks. For example:

```
VMR>; THIS LINE IS A COMMENT
```

```
VMR>TAS !THIS IS A COMMENT STRING!
```

Comments are especially useful to clarify commands in VMR indirect command files. (Refer to the RSX-11M/M-PLUS MCR Operations Manual for more information on indirect command files.)

### 10.4 COMMAND SUMMARY

The VMR commands described in this chapter are listed below by category. The detailed descriptions of the VMR commands are given in Section 10.5 in alphabetical order.

#### Initialization Commands

**ASSIGN** Define, delete, or display a global logical device assignment. List current assignments on console terminal.

**CONFIGURATION** (RSX-11M-PLUS systems only.) Display system configuration, or change a device's CSR or vector address.

**INSTALL** Install a task into the system image.

**LOAD** Load a device driver.

**REDIRECT** Redirect I/O requests from one physical device to another.

**SAVE** Write the system image file onto a secondary medium in bootstrappable format.

**SET** Set a variety of system and terminal characteristics. This command has both device characteristics keywords and memory allocation keywords.

**TIME** Enter time and/or date into the system image; display the time and date.

**UNLOAD** Unload a device driver.

#### Informational Commands

**DEVICES** Display a list of the peripheral devices defined in the system image.

**LUNS** Display the list of LUN assignments for an indicated task.



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PARTITIONS	Display the list of partitions defined in the system image.
TASKLIST	Display a list of the tasks installed in the system image.

On RSX-11M-PLUS, the display lists tasks installed in primary pool and then tasks installed in secondary pool.

### Task Control Commands

ALTER	Alter the priority of a task.
CANCEL	Cancel the time-based initiation requests for a task.
FIX	Fix a task in the system image.
REASSIGN	Change a task's LUN assignment.
REMOVE	Remove a task from the system image.
RUN	Schedule a task's activation. The task may run after one clock tick, after a delay, or in synchronization with the system clock. Periodic rescheduling is optional.
UNFIX	Unfix a task from the system image.

## 10.5 VMR COMMAND DESCRIPTIONS

The following subheadings are used in the detailed command descriptions in this section. Subheadings that do not apply to a particular command are omitted from the command description.

### Command Acronym

This subheading consists of the minimal form of the command name in capital letters. The acronym is at the outside margin of each page.

### Command Name

This subheading consists of the full command name in capital letters. The text following the name describes the command's function.

### Format

The command line format is given and all parameters are listed.

### Parameters

Parameters are listed and described.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

### Keywords

Keywords are listed and described.

### Examples

Examples of the command output are shown.

### Notes

A list of special considerations that may assist you in using the command properly appears under this subheading.



## ALT

### ALTER

Use the ALTER command to change the static priority of an installed task.

#### Format

ALT[ER] taskname /PRI=priority

#### Parameters

taskname

The name of the task whose priority is to be altered.

/PRI

The keyword that changes the task's static priority.

priority

The new priority to be assigned to the specified task, from 1 to 250 (decimal).

#### Example

VMR>ALT TEST /PRI=248.

Alters the static priority of task TEST to 248(10).



## ASN

## ASSIGN

Use the ASSIGN command to define, delete, or display logical-device assignments. Logical-device assignments are a way to associate logical names with physical, pseudo, or logical devices. When you assign a logical name to a pseudo or logical device, the system resolves the assignment to the associated physical device.

There are three types of logical-device assignments: global, local, and login. VMR supports the manipulation of global assignments only. Global assignments apply to all tasks in the running system. See the RSX-11M/M-PLUS MCR Operations Manual for information on local and login assignments.

A logical device name has the same syntax as that of a physical device unit. It consists of a 2-character ASCII name (alphabetic) and an optional 1- or 2-digit octal unit number, followed by a colon (:). The 2-character name can be either equivalent to a standard RSX-11M/M-PLUS device name (for example, DK:) or formed by two letters picked at random (for example, ZZ:).

When you install a task or the system executes an ASSIGN LUN directive, the system scans the logical device table before it scans the physical device table in searching for a specified device. As a result, you can define logical device names that are identical to physical device names even though the logical and physical device names do not refer to the same physical device. The system resolves a specified device name to the first matching table entry found. If a logical device name is identical to a physical device name, the logical name has precedence.

## Formats

ASN ppnn:=llnn:/GBL

Define a global assignment that associates the logical name llnn: with device ppnn:.

ASN /GBL

Display all global assignments for the system.

ASN =[llnn:]/GBL

Delete the specified global logical device assignment or, if you omit llnn:, delete all global assignments.

## Parameters

pp

A physical, logical, or pseudo device name.

nn

A unit number.

ll

A logical device name.

## ASN (Cont.)

### Examples

VMR>ASN DM:=GB0:/GBL

Defines the global logical device name GB0: and assigns it to DM:.

VMR>ASN /GBL

GB0: DM0: Global

Lists all global assignments.

VMR>ASN =/GBL

Deletes all global assignments.



**CAN****CANCEL**

Use the CANCEL command to cancel time-based initiation requests for a task. These requests result from the RUN\$ directive or any of the time-synchronized variations of the VMR RUN command.

CANCEL does not affect the execution of the task that may be active in the saved system image. It removes only the time-based schedule requests still in the queue.

**Format**

CAN[CEL] taskname

**Parameter**

taskname

The name of the task whose time-based initiation requests are to be canceled.

**Example**

VMR>CAN XKE

Cancels all periodic rescheduling and time-based initiation requests for task XKE.



**CON****CONFIGURATION**

(RSX-11M-PLUS systems only.) Use the CONFIGURATION command to display system configuration information on your terminal, or to change the CSR or vector address of a device.

**Format 1**

CON DIS[PLAY] [keyword][FOR string]

**Parameters****keyword**

One of the following keywords:

CON[TROLLERS]	CPU
UNI[TS]	FUL[L]

**FOR string**

A parameter that restricts the display to the devices matching the specified string.

**Keywords****CON[TROLLERS]**

Displays every device controller that is in the current configuration.

**UNI[TS]**

Displays every device unit that is in the current system.

**CPU**

Displays the CPUs that are in the current system.

**FUL[L]**

Displays the CPUs, the controllers, and the device units in the current configuration. If you do not specify any keyword, CON DISPLAY defaults to FULL. The controller's display contains (from left to right) the following information:

- The controller name
- Whether it is on line or off line
- The UNIBUS Run Mask (URM)
- The controller's CSR address
- The controller's starting vector
- The controller's priority



## CON (Cont.)

The units display contains (from left to right) the following information:

- The logical device name
- The physical device name (including physical names of both ports for dual-ported devices)
- Whether the device is on line or off line
- A field indicating "driver" is loaded

## Examples

## Single-Processor Systems

VMR>CONFIGURATION DISPLAY CONTROLLERS

RHA	OFL	CPA	CSR=176700	VEC=254	PRI=5
RHB	OFL	CPA	CSR=176300	VEC=150	PRI=5
RHC	OFL	CPA	CSR=172040	VEC=204	PRI=5
RHD	OFL	CPA	CSR=172440	VEC=224	PRI=5

.

.

.

YMA	OFL	CPA	CSR=170500	VEC=300	PRI=5
YZA	OFL	CPA	CSR=160100	VEC=340	PRI=5

VMR>

VMR>CON DIS UNI

DB0:	RHA0:	OFL	DRIVER
DB1:	RHA1:	OFL	DRIVER
DB2:	RHA2:	OFL	DRIVER
DB3:	RHA3:	OFL	DRIVER

.

.

.

NL0:	OFL	DRIVER
VT0:	OFL	DRIVER
RD0:	ONL	DRIVER

VMR>

VMR>CON DIS CPU

CPA

VMR>CON DIS FUL

CPA

RHA	OFL	CPA	CSR=176700	VEC=254	PRI=5
RHB	OFL	CPA	CSR=176300	VEC=150	PRI=5
RHC	OFL	CPA	CSR=172040	VEC=204	PRI=5
RHD	OFL	CPA	CSR=172440	VEC=224	PRI=5

.

.

.

DB0:	RHA0:	OFL	DRIVER
DB1:	RHA1:	OFL	DRIVER
DB2:	RHA2:	OFL	DRIVER
DB3:	RHA3:	OFL	DRIVER

.

.

.



## CON (Cont.)

NL0:	OFL	DRIVER
VT0:	OFL	DRIVER
RD0:	ONL	DRIVER
VMR>		

## Multiprocessor Systems

## VMR&gt;CONFIGURATION DISPLAY CONTROLLERS FOR RH

RHB	OFL	CPA	CSR=176300	VEC=150	PRI=5
RHC	OFL	CPA	CSR=176700	VEC=254	PRI=5
RHD	OFL	CPA	CSR=172440	VEC=224	PRI=5
RHH	OFL	CPB	CSR=176700	VEC=254	PRI=5
RHM	OFL	CPC	CSR=176700	VEC=254	PRI=5
RHN	OFL	CPC	CSR=172440	VEC=224	PRI=5
RHR	OFL	CPD	CSR=176300	VEC=150	PRI=5
RHS	OFL	CPD	CSR=176700	VEC=254	PRI=5

## VMR&gt;CON DIS CPU

CPA  
CPB  
CPC  
CPD

## VMR&gt;CON DIS FULL

CPA  
CPB  
CPC  
CPD

.

BS0: BSA0: BSB0: OFL DRIVER  
BS1: BSC0: BSD0: BSE0: BSF0: OFL DRIVER

.

DB0: RHH0: RHM0: OFL DRIVER

.

## VMR&gt;CON DIS FOR YH

YHA	OFL	CPA	CSR=160020	VEC=310	PRI=5
YHB	OFL	CPA	CSR=160040	VEC=320	PRI=5
YHC	OFL	CPA	CSR=160060	VEC=330	PRI=5

VMR>

## Format 2

CON SET controller-name CSR=value

or

CON SET controller-name VEC=value

## Parameters

controller-name

The name of the controller for which the CSR or vector address is to be changed.



**CON (Cont.)**

CSR=value

The new CSR address for the controller.

VEC=value

The new vector address for the controller.

**NOTE**

You may enter only one value per command line to the VMR CON SET command.

**Examples**

VMR>CON SET YHC CSR=160100

Sets the CSR address for the third DH-11 controller to 160100.

VMR>CON SET YHC VEC=340

Sets the vector address for the third DH-11 controller to 340.



## DEV

### DEVICES

Use the DEVICES command to display the symbolic names of all device units or, optionally, all of a particular device type defined in the system image. The device names appear in a single vertical column. A second column contains any additional information about each device.

#### Format

```
DEV[ICES] [dd:]
```

#### Parameter

dd:

The particular device type to be displayed. If you omit this parameter, the symbolic names of all device units are displayed.

#### Examples

```
VMR>DEV
LP0:    Loaded
DB0:    Loaded
DB1:    Loaded
DB2:    Loaded
DD0:    Loaded
DD1:    Loaded
DK0:    Loaded
DK1:    Loaded
DK2:    Loaded
DK3:    Loaded
DL0:    Loaded
DL1:    Loaded
DL2:    Loaded
DM0:    Loaded
DM1:    Loaded
DM2:    Loaded
DR0:    Loaded
DR1:    Loaded
DS0:    Offline   Loaded
DS1:    Offline   Loaded
DT0:    Loaded
DT1:    Loaded
DX0:    Loaded
DX1:    Loaded
EM0:    Unloaded
MM0:    Loaded
MM1:    Loaded
CO0:    TT0:
TT0:    Loaded
TT1:    Loaded
TT2:    Loaded
TT3:    Loaded
TT4:    Loaded
.
.
.
```



## DEV (Cont.)

NLO:  
TIO:  
CL0: LP0:  
LB0: DR0:  
SY0: DR0:  
VMR>

## Notes

Note that the pseudo device SY: is not redirected to the booted device until the system is booted.

The following list describes the messages that can appear in the second column. More than one message can appear on the same line.

- On RSX-11M, OFFLINE indicates that, although the system tables contain entries for the device, the system as saved did not contain the related device.
- On RSX-11M-PLUS, OFFLINE indicates that a device has yet to be brought on line by the reconfiguration task. All physical devices will have this attribute.
- LOADED indicates that the driver for the device is loadable and is currently loaded.
- UNLOADED indicates that the driver for the device is loadable and is currently not loaded.
- A device name in the second column is the device to which the corresponding device in the first column has been redirected.
- The absence of either LOADED or UNLOADED in the second column indicates that the driver is permanently resident; it is linked to the Executive.



## FIX

### FIX-IN-MEMORY

Use the FIX-IN-MEMORY command to load a task or, on RSX-11M-PLUS systems, a region into its partition in the system image. The system can service requests for running the task more quickly because the task is memory-resident and does not have to be loaded from the disk before it can run.

VMR can fix a task in the system image only if the partition in which it is to be fixed is available. (On RSX-11S systems, all installed tasks must be fixed since they cannot be loaded into the running RSX-11S system.)

Fixed tasks remain in memory even after they exit. Therefore, they do not have to be reloaded when a request is made to run them. However, note that reexecuting fixed tasks is not always practical. If you expect to reexecute a fixed task, you should write it such that it initializes all impure data and LUN assignments at run time.

Only an UNFIX or REMOVE command can free the occupied partition.

The following restrictions apply to the fixing of tasks:

- On RSX-11M systems, checkpointable tasks cannot be fixed. On RSX-11M-PLUS systems, checkpointable tasks should not be fixed because fixing a checkpointable task makes the task noncheckpointable.
- On RSX-11M-PLUS systems, tasks whose names are in the form ...xxx and xxx\$\$\$ cannot be fixed because that copy of the task is never executed. (The task is a prototype task.)
- Active tasks cannot be fixed.
- A task must be installed before it can be fixed.

### Format

```
FIX taskname[/keyword]
```

### Parameter

taskname

The task or region that you wish to fix in memory. If you do not specify a keyword, VMR assumes that the task is a single-user task.

/keyword

One of the following keywords (RSX-11M-PLUS systems only):

```
/DIR
/NSF
/REG
/RON
```



## FIX (Cont.)

## Keywords

## /DIR

Specifies that the task to be fixed is a directive common.

Directive commons are used to hold some of the Executive directives instead of the directives being kept in executive addressing space. Because the commons contain Executive code, they must be installed and fixed in the system image before the system can be booted.

The commons are installed and fixed in the system image by commands in SYSVMR.CMD as part of the system generation procedure. There are two directive commons used by RSX-11M-PLUS: DIR11M and DR211M. These commons are installed and fixed automatically by SYSVMR.CMD during system generation. DIR11M must be fixed in memory before any other directive commons can be fixed. Other directive commons must be fixed contiguously to DIR11M.

Directive commons are nonshufflable, that is, the shuffler cannot move them around in memory after they have been fixed.

To eliminate the directive commons, use the REMOVE command.

## /NSF

Specifies that the task to be fixed will be nonshufflable. The shuffler will not be able to move the tasks around in memory after the task has been fixed.

For information about the shuffler, see Chapter 14.

## /REG

Specifies that the task to be fixed is a common region.

## /RON

Specifies that the task to be fixed is a multiuser task, the read-only portion of which is to be fixed in memory. You must specify the entire task name.

## Examples

```
VMR>FIX XKE
```

Fixes task XKE in its partition.

```
VMR>FIX TTCOM/REG/NSF
```

Fixes resident common TTCOM in its partition and specifies that the task will be nonshufflable.

```
VMR>FIX ...EDI/RON
```

The editor EDI is built as a multiuser task. This command line fixes its read-only portion in its partition.



## INS

### INSTALL

Use the INSTALL command to make a specified task known in the system image or, on RSX-11M systems, to load a common into a common partition. An installed task is dormant until the Executive receives a request to run it. The optional keywords either provide parameters that were not specified at task-build time or override parameters that were specified.

When a task is installed, VMR creates a Task Control Block (TCB) for the task in a system image table called the System Task Directory (STD). The task parameters contained in the TCB enable the system to run the task when requested to do so by an MCR command, VMR command, or a system directive. A task cannot be run until you install it.

A TCB contains the address of the load-device Unit Control Block (UCB) and the logical block number (LBN) of the task image file. Because task image files are contiguous, the Executive can load the task image in one transfer when an MCR command or system directive requests an installed task. (Loading requires more than one transfer if the task is larger than 32K words.)

When VMR installs a task in a virgin system, it stores the task's LBN in the TCB. When you save a system, the SAVE command places the file identification, rather than the file's LBN, in the TCB. When the system is rebooted, it opens the task file and stores the task's new LBN in its TCB. If a task has been deleted, the system cannot open the task file when the system is rebooted. The system then automatically removes the task's TCB from the STD.

When VMR installs a task in a saved system image, it stores the task's file identification, rather than the LBN, in the TCB to allow a reboot to occur successfully. It is important that a saved system image not retain the physical disk addresses of the installed tasks because the Disk Save and Compress Utility Program (DSC) or the Backup and Restore Utility (BRU) can compress and copy a disk containing a saved system, thus moving the task files to different physical locations. Because the TCB entries contain task file identifications rather than LBNS, the system can function normally when it is rebooted.

### Format

```
INS[TALL] filespec[/keyword(s)]
```

### Parameters

filespec

A task image file specification in the form:

```
LB:[g,m]filename.type;version
```

The device specification must be LB:, the file type defaults to TSK, and standard defaults apply to the remaining fields.



## INS (Cont.)

/keyword(s)

One or more of the following keywords:

/AFF=[urm]	/RON=option
/CKP=option	/ROPAR=pname
/CLI=option	/SEC=option
/FIX=option	/SLV=option
/INC=size	/TASK=taskname
/IOP=option	/UIC=[group,member]
/PAR=pname	/XHR=option
/PMD=option	
/PRI=number	
/PRO=[system,owner,group,world]	

**Keywords**

/AFF=processor or /AFF=urm(s)

(RSX-11M-PLUS multiprocessor systems only.) The processor or UNIBUS Run Mask (URM) affinity of the task. If the latter, you must specify at least one URM. If you specify more than one URM, you must separate them by commas. The legal processor specifications are:

CPA  
CPB  
CPC  
CPD

The legal URM specifications are:

UBE	UBK	UBP
UBF	UBL	UBR
UBH	UBM	UBS
UBJ	UBN	UBT

When you specify the /AFF keyword, the installed task runs only on the processor to which the specified URMs are connected.

/CKP=option

The checkpointability of the task on systems that support the dynamic allocation of checkpoint space. The options are YES and NO. If /CKP=YES (default for checkpointable tasks), checkpointing is enabled for the task. If /CKP=NO, checkpointing is disabled for the task.

The /CKP keyword overrides the /CP switch specified at task build.

The task image file need not contain allocated checkpoint space. The /CKP=YES keyword instructs the system to allocate checkpoint space for the task, when required, from a checkpoint file.



**INS (Cont.)**

On RSX-11M systems, if a task was built with the /XH switch, the /CKP keyword is disabled for that task.

Default: /CKP=YES.

**/CLI=option**

Specifies that the task being installed is a command line interpreter (CLI). The options are YES and NO. You must install a CLI with the YES option before you can set a terminal to that CLI (MCR SET /CLI) or work with the CLI by means of the MCR CLI command.

**/FIX=option**

(RSX-11S systems only.) Specifies whether memory-resident tasks on RSX-11S will be fixed in memory. The options are YES and NO. When you specify /FIX=YES, the task is both installed and fixed in memory.

**/INC=size**

(Mapped systems only.) The extension size; that is, the number of additional words of address space to be allocated to a task that runs in a system-controlled partition. The extension size is usually expressed in octal but may also be expressed in decimal by appending a period (.). This keyword overrides the Task Builder's EXTTSK or PAR options.

Tasks such as MAC, TKB, PIP, VFY, and AT. (Indirect) use the space from the end of the task image to the end of their address space as dynamic memory in which to allocate symbol tables and buffers. The /INC keyword defines the number of words in this dynamic region.

Default: the size specified at task-build time or zero (0).

**/IOP=option**

Specifies that a privileged task can overmap the I/O page. The options are YES and NO. If /IOP=YES, INSTALL assumes that the task will overmap the I/O page (APR 7) and, if the task is larger than 8K words, issues a warning message. If /IOP=NO, INSTALL assumes that the task does not need to use the I/O page. No warning message is issued.

The /IOP keyword complements the Task Builder /IP switch. Specifying /IP informs INSTALL that the task is intentionally overmapping the I/O page.

Default: /IOP=YES.

**/PAR=pname**

A partition name that overrides the partition specified at task-build time.

On RSX-11M systems, if the partition specified for the task is a user-controlled partition, the size of the task is extended to the size of the partition. Consequently, if the task is built with checkpoint space allocated in the task image file and the partition is extended (thereby extending the size of the task when it is reinstalled), the allocated checkpoint space may no longer be large enough to hold the task.



## INS (Cont.)

If the keyword specifies a nonexistent partition, VMR issues a warning message and attempts to install the task in the GEN partition.

Default: the Task Builder uses the name GEN. (See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for an explanation of multiuser system defaults.)

## /PMD=option

Specifies whether a Postmortem Dump is required. The options are YES and NO. If /PMD=YES, the system will perform a Postmortem Dump of the task if it aborts the task because of an SST error condition. If /PMD=NO (the default from a task build), the system will not perform a dump following an SST abort. To generate a dump, you must install the Postmortem Dump task PMD... in the system. This keyword overrides the Task Builder's /PM switch.

Default: specified at task-build time.

## /PRI=number

The installed priority of the task. The number is the priority at which the task is to be installed. The value range is 1 through 250(10), where 250 is the highest priority. Standard RSX-11M/M-PLUS number conventions apply to this parameter: octal by default, decimal if followed by a period.

Default: PRI=50(10).

## /PRO=[system,owner,group,world]

(RSX-11M-PLUS systems only.) The protection mask for a common. The square brackets are required syntax.

A task linked to a common region with improper access cannot be installed.

The user categories are defined as:

## System

All system tasks running under a UIC group number less than or equal to 10(8).

## Owner

Tasks that run under the same UIC as the file's owner.

## Group

Any task that is running under the same UIC group as the file's owner.

## World

Any task that does not fit in one of the above categories.



**INS (Cont.)**

The /PRO keyword establishes the access rights for each category. If an access code is not specified, the access that the code represents is denied. The four access codes are:

- Read
- Write
- Extend
- Delete

Default: /PRO=[RWED,RWED,RWED,RWED].

Note that you cannot specify protection options for a read-only common region or the read-only portion of a multiuser task.

**/RON=option**

(RSX-11M-PLUS systems only.) Establishes whether a common region is to be read-only. The options are YES and NO. If /RON=YES, the region is installed as read-only. If /RON=NO, the region is installed with read/write access. This keyword overrides the effect of the /PRO keyword.

Default: /RON=NO; the region is installed with read/write access.

**/ROPAR=pname**

(RSX-11M-PLUS systems only.) The read-only partition into which the read-only portion of a multiuser task is to be installed. The pname is the name of a read-only system partition. This keyword overrides the Task Builder options. If the named partition does not exist, VMR issues a warning message and attempts to install the read-only portion of the task into the partition containing the read/write portion of the task.

Default: specified at task-build time.

**/SEC=option**

(RSX-11M-PLUS systems only.) Places the Task Control Block (TCB) for the task being installed in secondary pool. The keyword is legal only for tasks whose names are in the form ...xxx or xxx\$\$\$\$. The options are YES and NO. If /SEC=NO, the TCB for the task is placed in primary pool instead of secondary pool.

Default: the TCB is placed in secondary pool.

**/SLV=option**

The task's slave status. The options are YES and NO. If the command specifies /SLV=YES, data sent to the installed task is marked with the TI: of the sending task. When the installed task receives the data, the system sets the task's TI: to that associated with the data. This keyword overrides the Task Builder's /SL switch.

If you specify /SLV=NO, the TI: of the task does not change when the task receives data.



## INS (Cont.)

On RSX-11M-PLUS, the /SLV keyword cannot be used with tasks whose names are in the form ...xxx. These tasks are prototype tasks and cannot be installed as slaved tasks.

Default: specified at task-build time.

## /SYNC=option

(RSX-11M-PLUS multiprocessor systems only.) Synchronizes task use of a common. The options are YES and NO. This keyword permits several tasks to share a common and use the common for synchronization. If /SYNC=YES for two or more tasks, only one of the tasks can execute at one time. If one of the tasks becomes blocked, the others compete to execute.

The /SYNC keyword prevents inconsistent data that occurs as the result of race conditions. For example, if two tasks access a common, the /SYNC keyword ensures that only one task executes at one time. This prevents the second task from reading or writing the common while the first task is executing.

Default: /SYNC=NO.

## /TASK=taskname

The name to be used to install the task.

Default: the name specified at task-build time or the first six characters of the file name. (See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for an explanation of multiuser system defaults.)

## /UIC=[group,member]

The UIC for the task. The square brackets are required syntax. You can also override the UIC with the RUN command.

The task UIC determines the file-protection class (system, owner, group, world) to which a task belongs and thus directly influences file access. Note that file protection may differ from file to file.

Default: specified at task-build time. This default applies only to tasks started by a RUN\$ directive or a RUN command that specifies a time delay before run time. Tasks started by typing the name as a command (for example, PIP and TKB) run under the default UIC of the terminal from which the command was issued.

## /XHR=option

(RSX-11M-PLUS systems only.) Specifies that the Executive's copy of the task's header will be in an area external to the system's dynamic storage region (pool).

The options are YES and NO. If /XHR=YES, the task is installed with an external header. If /XHR=NO, the task is installed with a resident header.

When you specify /XHR=YES, the task's header is not kept in pool. Instead, a copy of the header is placed in a reserved area immediately below the task image. The Executive uses the copy of



**INS (Cont.)**

the header rather than the actual header. When the task is checkpointed, the system writes the task image and the copy of the header into the checkpoint file. The header in the task image is left unchanged.

The /XHR keyword correlates with the /XH option for the Task Builder. The default for /XHR and the ability for a user to override the option specified at task-build time depend on how the INSTALL task was built at system generation. See your system manager for this information.

**Examples**

VMR>INSTALL SCAN

Installs task SCAN using the default priority and UIC.

VMR>INSTALL DM1:[1,111]SCAN.TSK;4/PRI=103

Installs task SCAN, file type .TSK, version 4, from device DM1:, group number 1, member number 111, with a priority of 103(8).

VMR>INS MAC/INC=4096./PAR=SYSCTL

Installs task MAC in the partition SYSCTL and increases the task size by 4096(10) words.



**LOA****LOAD**

Use the LOAD command to load a nonresident device driver into the system image. LOAD either links a driver to an already resident data base or makes a loadable data base resident. This command eliminates the need to link infrequently used device drivers permanently into the Executive.

Executive support of loadable device drivers is a system generation option on RSX-11M but is always included on RSX-11M-PLUS.

**Format**

LOA[D] dd:[/keyword(s)]

**Parameters**

dd:

A 2-character ASCII device name.

/keyword(s)

One or two of the following keywords:

/CTB=cc[a,b,...] (RSX-11M-PLUS only)

/PAR=pname

/SIZE=psize

**Keywords**

/CTB=cc[a,b,...]

(RSX-11M-PLUS systems only.) The cc is the name of the multidriver controller (CTB) that should be used instead of \$ddCTB in the loadable data base. [a,b,...] are slots in the CTB's KRB table that should point at the KRBs in the loadable data base. The slots are named A,B,C,D,E,F,H,J,K,L,M,N,P,R,S, and T.

The /CTB keyword is used to load a driver that references a split data base. Refer to the RSX-11M-PLUS Guide to Writing an I/O Driver for more information.

/PAR=pname

The partition into which the driver is to be loaded. The pname is a partition name. The /PAR keyword overrides the partition specified at task-build time.

/SIZE=psize

The minimum size (octal words) of the partition into which the driver is to be loaded. The psize is the partition size. VMR rounds psize up to the next largest unit of 100(8). Psize must be less than 77741.



## LOA (Cont.)

### Examples

VMR>LOAD MM:

Loads the TUL6 driver (MMDRV).

VMR>LOA DK:/PAR=DRVPAR

Loads the RK05 driver (DKDRV) into DRVPAR.

VMR>LOA DR:/CTB=RHB

Loads the RM03 driver (DRDRV), using the RHB multidriver controller.

### Notes

1. Guidelines for building user-written loadable device-driver tasks are defined in the RSX-11M and RSX-11M-PLUS Guide to Writing an I/O Driver.
2. The LOAD command requires that a driver's .TSK and .STB files reside in the same UFD and on the same disk as the system image upon which you are working. For example, the following command requires that the files DTDRV.TSK and DTDRV.STB reside on SY: under the current UIC:

LOA DT:

3. The LOAD command requires pool space as follows:
  - a. If the driver data base is being loaded, the data base needs contiguous pool space equal to its size.
  - b. In a mapped system, each interrupt entry in the driver needs pool space for an Interrupt Control Block (ICB).
  - c. If the driver is being loaded into a system-controlled partition, the Partition Control Block (PCB) needs pool space.



**LUN****LOGICAL UNIT NUMBERS**

Use the LUN command to display the static LUN assignments for a specified task. Static assignments are those recorded in the task's disk image file (for example, those assignments specified at task-build time). The display consists of a list of physical device units in one column and their corresponding LUNs in an adjoining column.

**Format**

LUN[S] taskname

**Parameter**

taskname

The task for which the LUNs are to be displayed.

**Example**

```
VMR>LUN XKE
SY0: 1
SY0: 2
CL0: 3
TT3: 4
TT3: 5
DK0: 6
TT3: 7
```

The display shows static assignments for LUNs 1 through 7 as recorded in the task image file header. No other LUNs are statically assigned to the task XKE.



## PAR

### PARTITION DEFINITIONS

Use the PAR command to display a description of each memory partition in the system image. The display consists of six columns that specify:

1. Partition name
2. Partition Control Block address (octal)
3. Partition base address (octal)
4. Partition size (octal)
5. Partition type
6. Name of partition occupant(s) -- task, driver, common, and so forth.

On RSX-11M-PLUS, the symbols accompanying the name have the following meanings:

```

< > active task
[ ] in memory but inactive
+ + multiuser tasks (read-only sections)
! ! read-write named commons
( ) driver

```

### Format

PAR[TITIONS]

Example (of a saved system)

Name	PCB	Base	Size	PAR/TASK Name
VMR>PAR				
SYS	035720	00200300	00010000	MAIN
SPL	035654	00210300	00013000	MAIN
DRV	035610	00223300	00140000	MAIN
	035324	00223300	00003500	DRIVER (DB:)
	035260	00227000	00001300	DRIVER (DK:)
	035214	00230300	00003600	DRIVER (DR:)
	035150	00234100	00001600	DRIVER (DS:)
	035104	00235700	00004200	DRIVER (DM:)
	034774	00246400	00001300	DRIVER (DT:)
	034730	00247700	00001600	DRIVER (DX:)
	034664	00251500	00001200	DRIVER (LP:)
	034620	00252700	00035500	RW COM !TTCOM !
	034534	00310400	00020000	DRIVER (TT:)
	034470	00330400	00001400	DRIVER (RD:)
	034424	00332000	00001300	DRIVER (VT:)
	034360	00333300	00003100	DRIVER (CO:)
	034314	00336400	00000100	DRIVER (NL:)
	035040	00336500	00004400	DRIVER (MM:)



VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

PAR (Cont.)

LDRPAR	035544	00363300	00003000	MAIN	
	033774	00363300	00003000	TASK	<LDR...>
TSTPAR	035500	00366300	00040000	MAIN	
	036454	00366300	00040000	TASK	<SAVT0 >
SECPOL	035434	00426300	00050000	SEC POOL	
GEN	035370	00476300	04701500	MAIN	
VMR>					



## REA

### REASSIGN

Use the REASSIGN command to reassign a task's logical unit numbers (LUNs) from one physical device unit to another. The reassignments affect only the static assignments recorded in the task's disk image file.

The command does not affect a memory-resident task. Therefore, REASSIGN has no effect on the assignments for a task that is fixed or loaded in memory.

### Format

REA[SSIGN] taskname lun new:

### Parameters

taskname

The name of the task for which the LUNs are to be reassigned.

lun

The logical unit number.

new:

The new device unit, which can be a physical, logical, or pseudo device.

### Examples

VMR>REA LODN 3 TT0:

Reassigns LUN 3 of task LODN to physical device TT0:.

VMR>REA TEST 3 XX:

Reassigns LUN 3 of task TEST to logical device XX:.



**RED****REDIRECT**

Use the REDIRECT command to redirect all I/O requests from one physical device unit to another physical device unit.

You cannot redirect the following device units:

- The pseudo device TI: (nor can a device be redirected to TI:)
- An attached device

In addition, you cannot redirect a pseudo device to itself, nor can you redirect a terminal to the null device.

You can redirect a logged-in terminal to a device other than a terminal (except for the null device), but it is not generally advisable to do so because terminal I/O would be written to the device and that could destroy the boot block. If you do redirect a terminal to another type of device, you should redirect the terminal to itself before you log out.

**Format**

REDIRECT new:=old:

**Parameters**

new:

The new device unit to which requests will be redirected.

old:

The old device unit from which requests will be redirected.

**Examples**

VMR>RED TT3:=TT6:

Redirects all I/O requests for device TT6: to device TT3:.

VMR>RED TT:=LP:

Redirects all I/O requests for device LP0: to device TT0:.



## REM

### REMOVE

Use the REMOVE command to delete a task name or, on RSX-11M-PLUS systems, a region name from the System Task Directory. Removing a task from the system image makes the task unknown to the system. The action resulting from this command is the complement of INSTALL.

The REMOVE command cannot remove an active task from a saved system. An example of such a task is SAV; an attempt to remove SAV from a saved system results in the error: Task active.

### Formats

REM[OVE] name[/REG]

### Parameters

name

The name of the task, region, or directive common to be removed.

/REG

(RSX-11M-PLUS systems only.) Specifies that name is the name of a region.

You must specify this keyword when removing the directive commons. To remove the commons, use the following command line:

VMR>REM DIR11M/REG

Note that when you remove DIR11M, you are removing all of the directive commons in the system.

### Example

VMR>REM SCAN

Removes the task named SCAN from the System Task Directory. The task image file remains unaffected.

### Notes

1. If a task or region that is the object of a REMOVE command is fixed, the command automatically unfixes the task from the system image.
2. REMOVE automatically cancels all time-based schedule requests for the specified task.



## REM (Cont.)

3. To remove a command line interpreter (CLI) task, you must first eliminate the CPB for the task with the MCR CLI /ELIM command on the running system. Then use the MCR SAVE command to update the system image file, invoke VMR, and remove the CLI. However, it is recommended that you work with CLIs exclusively with MCR on the running system -- this includes eliminating and removing old CLIs, and installing and initializing new ones -- and then save the system.

An exception to this note is the primary MCR task (MCR...). The CPB for this task can never be eliminated and the task itself can only be removed with VMR.



## RUN

### RUN

Use the RUN command to initiate the execution of an installed task. This command, which has four formats, can cause a task to be:

- Started one clock tick after system boot
- Started at a time increment from the system image time
- Started at a time increment from clock unit synchronization
- Started at an absolute time of day

All of these options are available with or without rescheduling.

On RSX-11M-PLUS, you cannot run a task using the ...xxx form of the task name, that is, you cannot specify RUN ...xxx. The ...xxx (and xxx\$\$\$) form is used for the prototype copy of the task, which is never executed.

#### Format 1

```
RUN taskname [/keyword(s)]
```

Runs taskname one clock tick after system boot.

#### Parameters

taskname

The 1- through 6-character task name of the task that you want the system to run.

/keyword(s)

One or both of the following keywords:

```
/RSI=magu  
/UIC=[uic]
```

#### Keywords

/RSI=magu

The reschedule interval. The format is the same as that for dtime, which is detailed under Format 2. The reschedule interval specifies how often you want the system to rerun the task. Each time the interval of time you have specified lapses, the system makes an initiation request for the task. The default is no rescheduling.

If the magnitude field is equal to 0, then the reschedule interval is set to 1. Specifying /RSI=0H is the same as specifying /RSI=1H.



**RUN (Cont.)**

/UIC=[uic]

The UIC under which the task is requested. It determines which files the task can access. The UIC is in the format [g,m], where g and m represent the group and member numbers, respectively. Legal group and member numbers range from 1 through 377(8). The square brackets are required syntax.

Default: the UIC established for pseudo device CO:.

**Format 2**

RUN taskname dtime [/keyword(s)]

Runs taskname at a time increment from the system image time.

**Parameters**

taskname

The 1- through 6-character task name.

dtime

The time at which the task is initiated in time units from the current system image time. It has the form:

magu

mag

The magnitude, which is the number of units to be clocked. The magnitude value cannot exceed 24 hours in the specified unit and is decimal by default.

u

Time units specified as follows:

T for ticks. A tick is a clock interrupt. The rate at which interrupts occur depends on the type of clock installed in the system.

For a line frequency clock, the tick rate is either 50 or 60 ticks per second, corresponding to the line frequency.

For a programmable clock, a maximum of 1000 ticks per second is available. (The frequency is selected at system generation.)

T can be any positive value up to a maximum of 15 bits.

S for seconds. S can be any positive value up to a maximum of 15 bits.

M for minutes. M can be any positive value from 0 through 1440(10).

H for hours. H can be any positive value from 0 through 24(10).



## RUN (Cont.)

/keyword(s)

One or both of the following keywords:

/RSI=magu  
/UIC=[uic]

These keywords are described under Format 1.

### Format 3

RUN taskname sync [dtime] [/keyword(s)]

Runs taskname at a time increment from clock unit synchronization.

The system determines the task start-time by waiting for the specified time unit (sync) to increment and then waiting for the specified time (dtime) to elapse.

### Parameters

taskname

The 1- through 6-character task name.

sync

The synchronization unit. Permissible values are:

H - Synchronize on the next hour  
M - Synchronize on the next minute  
S - Synchronize on the next second  
T - Synchronize on the next tick

dtime

The value of dtime, if present, is added to the synchronization unit to produce the actual run time for running the task. The format for specifying dtime is given in Format 2.

/keyword(s)

One or both of the following keywords:

/RSI=magu  
/UIC=[uic]

These keywords are described under Format 1.

### Format 4

RUN taskname atime [/keyword(s)]

Runs taskname at an absolute time of day.



**RUN (Cont.)****Parameters****taskname**

The 1- through 6-character task name.

**atime**

The absolute time of day when this task will be initiated. Input format is hh:mm:ss, where:

hh - Hours (decimal assumed)  
mm - Minutes (decimal assumed)  
ss - Seconds (decimal assumed)

**/keyword(s)**

One or both of the following keywords:

/RSI=magu  
/UIC=[uic]

These keywords are described under Format 1.

**Examples**

VMR>RUN XKE 15M

Runs task XKE 15 minutes from the current system image time.

VMR>RUN XKE 15M/RSI=90S/UIC=[3,1]

Runs task XKE 15 minutes from the current system image time, rescheduling it every 90 seconds. The task is running under UIC [3,1].

**Note**

The correct value to be inserted in the clock queue for Formats 2 through 4 is computed from the current value of the system time stored in the system image. Thus, the system image time must be set before any RUN requests are made or they may not occur at the correct time after the system is booted.



**SAV****SAVE**

Use the SAVE command to write the image of a system onto a sequential medium in bootstrappable format. With this command, you can copy an RSX-11S or a foreign system onto a tape or a floppy disk. You can then transport the tape or floppy to another computer and bootstrap it, using a hardware bootstrap. (Refer to the description of the /IM switch in Section 10.2.)

On paper tape, system images are created in absolute loader format and must be bootstrapped with the absolute loader.

**Format**

SAV[E] ddnn:[label] [/keyword(s)]

**Parameters**

ddnn:

The device unit onto which the system image is to be written. Valid devices are as follows:

CT: Tape cassette  
 DD: TU58 DECTape II  
 DT: DECTape  
 DU: RX50 flexible disk/RA60 disk/RC25 disk (removable)  
 DX: RX01 flexible disk  
 DY: RX02 flexible disk  
 MM: TE/TU16/TU45/TU77 magnetic tape  
 MS: TS11/TSV05/TU80 magnetic tape  
 MT: TE/TU10/TS03 magnetic tape  
 PP: Paper tape

label

The file label name that must be specified for all secondary media except paper tape. It consists of from 1 to 12 alphanumeric characters.

**Keywords:**

/BOOT=type:

Specifies the type of boot block being used when the system image is saved. The options for type are DX: (for RX01s) and DY: (for RX02s).

The keyword allows you to boot on an RX01 a system that was saved on an RX02 in single-density mode and vice versa.

If you do not use /BOOT, the boot block for the type of device being used is written to the device.

/DENS=1600

Specifies the bits per inch (bpi) density for the following 9-track magnetic tapes: TE16, TU16, TU45, and TU77. These tapes use the device mnemonic MM:



## SAV (Cont.)

## Example

VMR>SAV MT:MYSYS

In this example, the system image is written onto MT: in bootstrappable format. System changes made by other VMR commands are also saved with the system image.

## Notes

1. When you save RSX-11S systems on paper tape and you do not apply the /IM switch to the system's file name (refer to Section 10.2 for a description of the /IM switch), the last 1000(8) bytes of the system image are not written out. This allows space to accommodate the absolute loader. When you specify the /IM switch with the system's file name, the entire system image is written to paper tape. In this case, it is your responsibility to ensure that the system image is not so large that it overlays the absolute loader.
2. When you save a system on paper tape, contiguous blocks that contain only zero and that begin on a 32-word address are compressed into a 2-word descriptor. This compression significantly reduces both the amount of paper tape required and the time expended to create the tape and to read it into memory. After the entire image has been loaded into memory, a short routine zeroes the appropriate blocks of memory before passing control to the bootstrapped system.
3. When you bootstrap systems on media other than paper tape, regardless of the size of the system image, the last 1000(8) bytes of physical memory are not copied to accommodate the bootstrap.
4. Systems saved on a TE/TU10/TS03 9-track magnetic tape drive can be booted from a TE/TU16 drive and vice versa.
5. When you specify the /IM switch with the system file specification, the SAVE command always uses a bootstrap that does not enable memory management.
6. On RSX-11M, the maximum memory size of a system is 124K words. The SAVE command imposes maximum sizes on saved images of mapped systems for certain devices. If a mapped system is saved and its memory size is greater than the maximum size imposed by the SAVE command for the specified device, only the amount of memory equal to the maximum size (starting at physical location 0) is saved; no diagnostic message is issued.

The devices for which the SAVE command imposes a maximum size on saved system images are:

Paper tape punch (PP:)	28K words
Cassette tape (CT:)	28K words
RX01 flexible disk (DX:)	123K words
RX02 flexible disk (DY:)	123K words



## SAV (Cont.)

7. None of the bootstraps require that a target RSX-11S system have a driver for the bootstrap device.
8. Unless you specify /DENS=1600, when you save a system image to a magnetic tape drive that supports multiple densities, the drive is forced to 800 bpi before the SAVE operation is started.



## SET

## SET

Use the SET command to alter a number of system-wide characteristics. The following list describes the available options. The SET command allows you to:

- Display the status (determined by the keyword specified) for all terminals
- Establish device characteristics for any device in the system
- Establish the default UIC for any terminal in the system
- Establish the system UIC used by the LOAD command and the install-run-remove option of the MCR RUN command
- Set the status of any terminal in the system
- Create and eliminate partitions
- Add space to the system dynamic memory
- Enable write checking and seek optimization on devices that support it

Improper use of the SET command can result in a situation in which the system will not accept privileged user input. The following situations should be avoided:

- The system does not have any nonslaved, privileged terminals. This is unacceptable because nonprivileged terminals cannot enter privileged commands and slaved terminals cannot enter unsolicited input to MCR. See the description of the /SLAVE keyword.
- The buffer length of any nonslaved, privileged terminal is shorter than 14 bytes on RSX-11M and shorter than 2 bytes on RSX-11M-PLUS. In this case, the terminal buffer is too small to enter many important commands required either to continue system operation or alter the status of other terminals. See the description of the /BUF keyword.

On RSX-11M, a number of SET command options (for example, /CRT, /ESCSEQ, /LOWER, and /WCHK) require Executive features that must be included at system generation. If you specify an option that has not been generated into the system image, the SET command has no effect and results in an error message.

Also, some of the keywords are only supported with the full-duplex terminal driver. The full-duplex terminal driver is a system generation option in RSX-11M systems but is always included in RSX-11M-PLUS systems. Note that if you select the full-duplex driver on RSX-11M, you must also select the get/set multiple characteristics options to set or display any terminal-related characteristics.

VMR permits only one keyword per command line. You can prefix most keywords by NO to negate or disable the function of the keyword. VMR returns a syntax error message when NO precedes a keyword for which it is illegal.



**SET (Cont.)**

Examples of using the SET command follow the description of the keywords.

**Format**

SET /keyword=value

**Parameter**

/keyword=value

One of the keywords listed in Table 10-1. The keywords are described in alphabetical order following the table.

Table 10-1  
SET Keywords

Type	Keywords
Device Characteristics	/ABAUD[=ttnn:] /BRO[=ttnn:] /BUF=ddnn:[size] /CRT[=ttnn:] /EBC[=ttnn:] /ECHO[=ttnn:] /ESCSEQ[=ttnn:] /FDX[=ttnn:] /FORMFEED[=ttnn:] /HFILL=ttnn:[value] /HHT[=ttnn:] /LINES=ddnn:[value] /LOWER[=ttnn:] /OPT[=ddnn:opttyp] /PRIV[=ttnn:] /PUB[=ddnn:] /REMOTE[=ttnn:[baud]] /RPA[=ttnn:] /SLAVE[=ttnn:] /SPEED=ttnn:[recv:xmit]

(continued on next page)



## SET (Cont.)

Table 10-1 (Cont.)  
SET Keywords

Type	Keywords
Device Characteristics (Cont.)	/TERM=ttnn:[type] /TYPEAHEAD[=ttnn:[size]] /UIC[=[uic][:ttnn:]] /VFILL=[ttnn:] /WCHK[=ddnn:] /WRAP[=ttnn:]
Enable/Disable Login	/LOGON
Library or System UICs	/LIBUIC[=[uic]] /NETUIC[=[uic]] /SYSUIC[=[uic]]
Memory Allocation (see notes before examples)	/AFF=[UNIBUS-mask] /BOT=pname:value /MAIN=pname[:base:size:type] /NOMAIN=pname /MAXEXT[=size] /PAR=pname[:base:size[:type]] /NOPAR=pname /POOL[=top] /POOLSIZE[=value] /SECPOL /SUB=mname:pname[:base:size] /NOSUB=mname:pname /TOP=pname:value
Pool Monitor Task	/PLCTL[=[high][:[low][:[frsiz][:basep]]]]
System Tuning	/RNDC[=nn] /RNDH[=nn] /RNDL[=nn] /SWPC[=nn] /SWPR[=nn]



## SET (Cont.)

## Keywords:

/ABAUD[=ttnn:]

(Full-duplex terminal driver only.) Enables autobaud detection for the remote dial-up line for the specified terminal. The terminal driver samples the line's first input character, tries to determine the incoming baud rate, and sets the interface speed accordingly.

When you omit the terminal specification, VMR displays all the terminals with autobaud detection.

/NOABAUD[=ttnn:]

(Full-duplex terminal driver only.) Disables autobaud detection for the specified terminal. The terminal driver does not attempt to determine the incoming baud rate for the remote dial-up line.

When you omit the terminal specification, VMR displays all the terminals that do not have autobaud detection.

/AFF=[UNIBUS-run-mask,...]

(RSX-11M-PLUS multiprocessor systems only.) Specifies which I/O page will contain the device partition. The keyword is required for creating device partitions on the system.

UNIBUS-run-mask

A 3-letter name of the UNIBUS Run Mask (URM) with which the device partition is associated. There is one URM for each processor, as follows:

CPA  
CPB  
CPC  
CPD

There are also up to 12 URMs for the switched UNIBUS runs, as follows:

UBE	UBK	UBP
UBF	UBL	UBR
UBH	UBM	UBS
UBJ	UBN	UBT

You must specify at least one URM. If you specify more than one URM, you must separate them by commas.

You must enclose the URM specification in brackets.

For example, to create a device partition that is mapped to CPA's I/O page, enter the following command:

SET /PAR=DEVP:177600:200:DEV/AFF=[CPA]



## SET (Cont.)

/BOT=pname:value

Directs VMR to move the bottom boundary of the specified system-controlled partition up or down the amount indicated by the value parameter. The keyword modifies the bottom boundary of a partition even though it has tasks installed in it. If you modify the partition so that it becomes too small to hold the tasks installed in it, VMR displays a warning message, but it will modify the partition anyway.

pname

The 1- to 6-character alphanumeric partition name.

value

The number of 64-byte blocks.

The value parameter can be supplied in five formats: +value, -value, value, +\* or \*, and -\*.

+value

Moves the bottom boundary up by the specified amount. Moving the bottom boundary up makes the partition smaller.

## NOTE

You can supply the value in the same units as those of the base and size parameters for the /PAR keyword.

-value

Moves the bottom boundary down by the specified amount. Moving the bottom boundary down makes the partition larger.

value

Establishes the total partition size equal to the specified value by moving the bottom boundary.

+\* or \*

Moves the bottom boundary up as far as possible. Note that using this format will cause the bottom boundary to move up to the bottom of the first fixed task or fixed driver loaded into the partition at the time the /BOT keyword is executed. If there is nothing loaded into the partition, it assumes a size of one 64-byte block.

-\*

Moves the bottom boundary down as far as possible. Using this format will cause the bottom boundary of the partition to move down to the top boundary of the partition below it, or to the top of the Executive pool if the partition is the lowest partition in memory.



## SET (Cont.)

**/BRO[=ttnn:]**

Enables the broadcast option for the specified terminal. The terminal can receive messages sent from other terminals with the MCR BROADCAST command.

When you omit the terminal specification, VMR displays all the terminals that can receive messages.

The /BRO keyword is valid only on systems with multi-CLI support.

**/NOBRO[=ttnn:]**

Disables the broadcast option for the specified terminal. The terminal cannot receive messages sent from other terminals.

When you omit the terminal specification, VMR displays all the terminals that cannot receive messages.

The /NOBRO keyword is valid only on systems with multi-CLI support.

**/BUF=ddnn:[size]**

Sets the default buffer size of the specified device. The size must be greater than zero and less than or equal to 255(10) (for a terminal, the buffer size must be greater than or equal to 15 decimal). The /BUF keyword is particularly useful for defining line printer width (80 or 132 columns).

When you omit the size specification, VMR displays the current buffer size of the device.

**/CRT[=ttnn:]**

Defines the specified terminal as a cathode ray tube (CRT) terminal and enables the backwards deletion option. When the backwards deletion option is enabled, pressing the RUBOUT or DELETE key moves the printing position one space to the left and erases any character displayed in that position.

When you omit the terminal specification, VMR displays all the terminals that are defined as CRTs.

**/NOCRT[=ttnn:]**

Deletes the CRT status of the specified terminal and disables the backwards deletion option.

When you omit the terminal specification, VMR displays all the terminals that are not defined as CRTs.

**/EBC[=ttnn:]**

(Full-duplex terminal driver only.) Enables the 8-bit character option. The terminal driver passes all eight bits of the input characters to the specified terminal.

When you omit the terminal specification, VMR displays all the terminals that have the 8-bit character option enabled.



## SET (Cont.)

/NOEBC[=ttnn:]

(Full-duplex terminal driver only.) Disables the 8-bit character option. The terminal driver strips off the parity bits of the input characters before passing them to the device.

When you omit the terminal specification, VMR displays all the terminals that do not have the 8-bit character option enabled.

/ECHO[=ttnn:]

Enables the echo option. The terminal driver displays each character that is typed on the specified terminal.

When you omit the terminal specification, VMR displays all the terminals that have the echo option enabled.

/NOECHO[=ttnn:]

Disables the echo option. The terminal driver does not display the characters that are typed on the specified terminal.

When you omit the terminal specification, VMR displays all the terminals that have the echo option disabled.

/ESCSEQ[=ttnn:]

Enables the recognition of escape sequences from the specified terminal. The terminal driver treats the ESC character as the beginning of an escape sequence rather than as a line terminator. (See the RSX-11M/M-PLUS I/O Drivers Reference Manual for further information about escape sequences.)

When you omit the terminal specification, VMR displays all the terminals that recognize escape sequences.

/NOESCSEQ[=ttnn:]

Disables the recognition of escape sequences at the specified terminal.

When you omit the terminal specification, VMR displays all the terminals that do not support the recognition of escape sequences.

/FDX[=ttnn:]

(Full-duplex terminal driver only.) Enables the full-duplex option. The terminal driver accepts input from the specified terminal while simultaneously outputting to it.

When you omit the terminal specification, VMR displays all the terminals that have the full-duplex option enabled.

/NOFDX[=ttnn:]

(Full-duplex terminal driver only.) Disables the full-duplex option. The terminal driver will not process input and output from the specified terminal simultaneously.

When you omit the terminal specification, VMR displays all the terminals that do not have the full-duplex option enabled.



## SET (Cont.)

/FORMFEED[=ttnn:]

Indicates that the specified terminal has a hardware form feed.

When you omit the terminal specification, VMR displays all the terminals that have hardware form feeds.

/NOFORMFEED[=ttnn:]

Indicates that the specified terminal will not have a hardware form feed.

When you omit the terminal specification, VMR displays all the terminals on the system that do not have hardware form feeds.

/HFILL=ttnn:[value]

(Full-duplex terminal driver only.) Specifies the number of fill characters (value) that the terminal driver is to place after a carriage return when outputting to the specified terminal. The value is a number from 0 through 7.

When you omit the value parameter, VMR displays the number of fill characters currently being output by the terminal driver to the specified terminal.

/HHT[=ttnn:]

(Full-duplex terminal driver only.) Indicates that the specified terminal has a hardware horizontal tab.

When you omit the terminal specification, VMR displays all the terminals on the system that have a hardware horizontal tab.

/NOHHT[=ttnn:]

(Full-duplex terminal driver only.) Indicates that the specified terminal will not have a hardware horizontal tab.

When you omit the terminal specification, VMR displays all the terminals that do not have a hardware horizontal tab.

/LIBUIC[=[uic]]

(RSX-11M-PLUS systems only.) Directs the INSTALL command to search the specified UIC in response to a RUN \$file or INS \$file command when the file is not in the system UIC.

The UIC is in the format [g,m], where g and m are octal numbers from 1 through 377(8) that represent a group and member number, respectively. The square brackets are required syntax. The default LIBUIC is [3,54].

When you omit the UIC specification, VMR displays the current library UIC.



## SET (Cont.)

/LINES=ddnn:[value]

(Full-duplex terminal driver only.) Establishes the number of lines per page on the specified device. The value is a number from 1 through 255(10). If you specify a number that is larger than the number of lines per page possible for a given device, VMR defaults to the largest number possible for that device.

When you omit the value parameter, VMR displays the lines per page for the specified device.

/LOGON

Enables logging in on terminals in a multiuser protection system. (See /NOLOGON for more information.)

/NOLOGON

Disables logging in on terminals in a multiuser protection system. /LOGON and /NOLOGON clear and set a flag checked by the HELLO command when a user attempts to log in on a terminal. /NOLOGON provides a means of preventing users from accessing the system during such activities as system maintenance or account file maintenance.

/LOWER[=ttnn:]

Specifies that lowercase characters are not to be converted to uppercase when they are received from the specified terminal.

When you omit the terminal specification, VMR displays all the terminals for which lowercase characters are not converted.

/NOLOWER[=ttnn:]

Resets the terminal characteristics of the specified terminal so that lowercase characters received on input are automatically converted to uppercase and echoed as uppercase.

When you omit the terminal specification, VMR displays all the terminals for which conversion to uppercase is specified.

/MAIN=pname[:base:size:type]

(RSX-11M systems only.) Establishes a main partition.

pname

The 1- to 6-character alphanumeric partition name.

base

The physical base address of the partition specified as a number of 64-byte blocks.

size

The size of the partition specified as a number of 64-byte blocks. The maximum size is 0 to 1920.K words for a task, common, or main partition.



## SET (Cont.)

type

SYS for a main partition, DEV for a common partition that maps the device registers, COM for a common partition, or TASK for a task partition.

Main partitions are allocated for user tasks and loadable drivers.

Device partitions are allocated for device commons that are used by tasks to access the device registers on the I/O page.

You can enter base and size in any of the following formats:

Format	Calculated Value
nnnn	Octal (nnnn*100)
nnnn.	Decimal (nnnn.*64.)
nnnK	Octal K (nnn*4000)
nnn.K	Decimal K (nnn.*2048.)

where nnnn is a number to which a multiplication factor is applied to determine the value used. Valid ranges of calculated values are:

Octal	0<=base<177777	0<size<2000
Decimal	0.<=base<65535	0.<size<1024.
Octal K	0K<=base<3777K	0K<size<40K
Decimal K	0.K<=base<2047.K	0.K<size<32.K

For system-controlled partitions, size may range from 0 to 1920.K or any valid representation of these limits.

You can specify the base address of a partition through a wildcard (\*) for TASK or SYS partitions in a mapped system. When you specify a wildcard (\*), VMR creates a partition at the lowest address possible for a partition of the size you have specified.

You can also specify the size of a partition through a wildcard (\*) for SYS partitions. When you specify the wildcard (\*), VMR creates the largest possible partition starting at the base address you have specified in the base parameter.

When you specify wildcards for both the base and size, VMR will create a partition that will completely fill the first gap in the existing partition layout.

If you do not specify base, size, or type, VMR displays the values of these parameters for the named partition. If the named partition is a main task-controlled partition, VMR also displays the parameters of all its subpartitions.

/NOMAIN=pname

Eliminates a named main partition from the system. The partition you specify is eliminated from the list of partitions and the system. If any tasks or commons are installed in or attached to the partition, the partition is not eliminated and VMR generates an error message.



## SET (Cont.)

/MAXEXT[=size]

Establishes the maximum size to which a task can extend itself beyond its mapped array area by means of the EXTEND TASK directive. (See the RSX-11M/M-PLUS Executive Reference Manual for a description of the directive.) The size is given in units of 32(10)-word blocks. The maximum size allowed is 1777(8) for systems without PLAS and 17777(8) for systems with PLAS.

You can specify size in the following five formats:

Specified Size	Resulting Size
n	(n*100) octal
n.	(n*64.) decimal
nK	(n*4000) octal
n.K	(n*2048.) decimal
*	1777(8) maximum for systems without PLAS; 17777(8) maximum for systems with PLAS

When you omit the size specification, VMR displays the current maximum extension size in 100(8)-byte units.

The /MAXEXT keyword is valid only on mapped RSX-11M systems that have selected the EXTEND TASK directive option during system generation and on all RSX-11M-PLUS systems. However, you can use both the unmapped and mapped versions of VMR to establish the maximum extension size for tasks.

/NETUIC[=[uic]]

Specifies the UIC in which all DECnet-related tasks are stored. The keyword applies only to systems that selected the external communication products option during system generation. The UIC is in the format [g,m], where g and m are octal numbers from 1 to 377(8) that represent a group and member number, respectively. The square brackets are required syntax.

When you omit the UIC specification, VMR displays the current network UIC.

/OPT[=ddnn:opttyp]

(RSX-11M-PLUS systems only.) Enables disk I/O queue optimization for the specified device. For more information on optimization and on the algorithm (opttyp) parameter for this keyword, see Chapter 16.

ddnn:

The device that will use I/O queue optimization. Legal devices are DB:-, DL:-, DM:-, and DR:-type devices. When you do not specify a device, VMR displays all the devices that use optimization.



**SET (Cont.)**

opttyp

The algorithm for optimization. The algorithms are:

NEAR[EST]  
ELEV[ATOR]  
CSCAN

The default algorithm set at system generation is NEAR.

/NOOPT[=ddnn:]

(RSX-11M-PLUS systems only.) Disables disk I/O queue optimization for the specified device.

When you omit the device specification, VMR displays all the devices that do not use I/O queue optimization.

/PAR=pname[:base:size[:type]]

(RSX-11M-PLUS systems only.) Establishes a partition.

pname

The 1- through 6-character alphanumeric partition name.

base

The physical base address of the partition specified as a number of 64-byte blocks or as a wildcard (\*).

size

The size of the partition, specified as a number of 64-byte blocks or as a wildcard (\*). The maximum size is 0 to 1920.K words for a task, common, or main partition.

type

SYS for a main partition, SECPOL for a secondary pool partition, DEV for a common partition that maps the device registers, or CPU for CPU partitions.

Main partitions are allocated for user tasks and loadable drivers.

Pool partitions are allocated for secondary pool.

Device partitions are allocated for device commons that tasks use to access the device registers on the I/O page. Note that creating a device partition automatically creates a main partition named IO PAR, which spans the entire I/O page. The partition you specify with the /PAR keyword then becomes a subpartition of IO PAR. On multiprocessor systems, you must use the /AFF (affinity) keyword to specify which I/O page contains the device partition.

CPU partitions are allocated on multiprocessor systems to store vectors for all the devices associated with the particular processor.

Partition type is an optional parameter. If you do not specify it, SYS is the default.



## SET (Cont.)

You can enter base and size in any of the following formats:

Format	Calculated Value
nnnn	Octal (nnnn*100)
nnnn.	Decimal (nnnn.*64.)
nnnK	Octal K (nnn*4000)
nnn.K	Decimal K (nnn.*2048.)

where nnnn is a number to which a multiplication factor is applied to determine the value used.

For SYS partitions, size can range from 0 to 1920.K or any valid representation of these limits. For example, the following inputs for size allocate a 2048(10)-byte partition:

40  
32.  
1K  
1.K

You can also specify the base address of a partition with a wildcard (\*). When you specify a wildcard (\*), VMR creates a partition at the lowest address possible for a partition of the size you have specified.

You can also specify the size of a partition with a wildcard (\*). When you specify the wildcard (\*), VMR creates the largest possible partition starting at the base address you have specified in the base parameter. When you specify a wildcard for a CPU partition, VMR creates a partition of size (n-1)\*4K, where n is the number of processors specified during SYSGEN.

When you specify wildcards for both the base and size, VMR creates a partition that completely fills the first gap in the existing partition layout.

If you do not specify base, size, or type, VMR displays the values of these parameters for the named partition. If the named partition is a main partition, VMR also displays the parameters of all its subpartitions.

When you are establishing base and size for a CPU partition, note that the entire CPU partition must exist below 124K.

/NOPAR=pname

(RSX-11M-PLUS systems only.) Eliminates a named partition from the system. The partition you specify is eliminated from the list of partitions and the system. If any tasks or commons are installed in or attached to the partition, the partition is not eliminated and VMR generates an error message.

/PLCTL=[high][:[low][:[frsiz][:basep]]]]

(Systems with pool monitoring support only.) Sets the pool limit parameters used by the Pool Monitor Task (PMT). The following list defines the parameters:

high

The high pool limit in bytes.



## SET (Cont.)

low

The low pool limit in bytes.

frsiz

The minimum byte size of the largest free pool block required for avoiding low pool actions by the Pool Monitor Task (PMT...).

basep

The base task priority, which is the lowest priority a nonprivileged task can have and still be eligible for memory contention during times of low pool; this priority remains in effect until pool conditions improve. (Note that only those tasks requested to run while the system is in a low pool state are affected).

The following list defines the limits of the parameters:

- 84.  $\leq \text{low} \leq \text{high} \leq \text{total size of system pool}$
- 84.  $\leq \text{frsiz} \leq \text{high}$
- 0.  $\leq \text{basep} \leq 250$ .

The following list gives the defaults for the parameters:

- high      1600. bytes
- low        600. bytes
- frsiz      200. bytes
- basep      51.

See the RSX-11/M-PLUS System Management Guide for information on determining the values for the parameters.

When you omit the parameter specifications, VMR displays the current parameters for the system.

/POOL[=top]

Increases the size of the dynamic storage region (pool).

top

The first location in memory used for partition allocation. You specify top in units of 64-byte blocks, in octal or decimal.

When you do not specify top, VMR displays the virtual address of the top of the Executive, the size of the longest block of pool space in words, the total number of words in the pool, and, on RSX-11M-PLUS, the lowest physical address at which a partition can start. (You can use the address when calculating partition layouts for systems supporting kernel data space. If your system is not a kernel data space system, this value is always equal to the virtual address of the top of pool.) The display's format is:

POOL=top:max:total[:par]



## SET (Cont.)

where top is given in units of 64-byte blocks, max and total are in decimal words, and par is the lowest physical address (32-word blocks).

You can also specify top by using a wildcard (\*). The wildcard directs VMR to supply the maximum amount of pool possible. Specify the wildcard as follows:

/POOL=\*

If you request more pool than can be supplied, VMR prints a warning message and supplies the maximum amount of pool possible.

/POOLSIZE[=value]

Specifies a total amount of pool rather than a top address.

If you do not specify a value, VMR displays the virtual address of the top of the Executive, the size of the longest block of pool space in words, the total number of words in the pool, and the lowest physical address at which a partition can start (32-word blocks).

/PRIV[=ttnn:]

Sets the specified terminal to privileged status.

When you omit the terminal specification, VMR displays all the privileged terminals in the system.

/NOPRIV[=ttnn:]

Sets the specified terminal to nonprivileged status.

When you omit the terminal specification, VMR displays all the nonprivileged terminals in the system.

/PUB[=ddnn:]

Establishes the specified device as a public device.

When you omit the device specification, VMR displays all the public devices in the system.

/NOPUB[=ddnn:]

Causes the specified device to lose its public status.

When you omit the device specification, VMR displays all the nonpublic devices in the system.

/REMOTE[=ttnn:[speed]]

Declares that the specified terminal is connected to a modem and can be connected to the system by means of a dial-up network. The terminal has a line to a DH11, DHV11, DL11, DLV11, DZ11, or DZV11 multiplexer.

Specifying speed establishes the initial baud rate (answer speed) of the remote dial-up line for the specified terminal. You may specify an answer speed only for DH11s, DHV11s, DZ11s, and



## SET (Cont.)

DZVlls, which are variable-speed multiplexers. (You cannot specify an answer speed for DLlls or DLVlls.)

Valid speeds for the DHll are 0, 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, EXTA (user-specified baud rate A), and EXTB (user-specified baud rate B).

Valid speeds for the DHVll are 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, and 19200.

Valid speeds for the DZll and DZVll are 50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, and 9600.

When you omit the terminal specification, VMR displays all the remote terminals. When you omit the speed specification, the current setting for the terminal remains in effect.

/NOREMOTE[=ttnn:]

Establishes the terminal's line as a local line not connected to a modem.

When you omit the terminal specification, VMR displays all the local terminals.

/RNDC[=nn]

- Defines the length of the Executive round-robin scheduling interval in ticks. The parameter nn can be an octal value, or decimal value if followed by a period (.). The minimum value for nn is 0. See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for more information.

When you omit the length specification, VMR displays the current value for the interval.

/RNDH[=nn]

- Defines the highest priority (1 through 250 decimal) that will be considered for Executive round-robin scheduling. The priority class must be higher than the one specified with the /RNDL keyword. See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for more information.

When you omit the priority class, VMR displays the current value for the priority.

/RNDL[=nn]

- Defines the lowest priority (1 through 250 decimal) that will be considered for Executive round-robin scheduling. The priority class must be lower than the one specified with the /RNDH keyword. See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for more information.

When you omit the priority class, VMR displays the current value for the priority.

/RPA[=ttnn:]

(Full-duplex terminal driver only.) Enables the read-pass-all option. The terminal driver passes all characters input at the keyboard to the terminal's input buffer.



**SET (Cont.)**

When you omit the terminal specification, VMR displays all the terminals on the system that have the read-pass-all option enabled.

/NORPA[=ttnn:]

(Full-duplex terminal driver only.) Disables the read-pass-all option. The terminal driver does not pass special function characters (for example, CTRL/C) input at the keyboard to the terminal's input buffer.

When you omit the terminal specification, VMR displays all the terminals on the system that have the read-pass-all option disabled.

/SECPOL

(RSX-11-M-PLUS systems only.) Displays secondary pool use in the system. The display is in the following format:

SECPOL=secfr:secsiz:pctfr

secfr

The number of free blocks in secondary pool in units of 32-word (decimal) blocks.

secsiz

The size of secondary pool in units of 32-word (decimal) blocks.

pctfr

The percentage of free blocks in secondary pool.

/SLAVE[=ttnn:]

Establishes the specified terminal as one that can enter data only if it is solicited by a task. Thus, the specified terminal always rejects unsolicited input (other than CTRL/O, CTRL/Q, and CTRL/S).

When you omit the terminal specification, VMR displays all the terminals currently classified as slaved.

/NOSLAVE[=ttnn:]

Sets the specified terminal to nonslaved status.

When you omit the terminal specification, VMR displays all the terminals currently classified as nonslaved.

/SPEED=ttnn:[recv:xmit]

Establishes the receive and transmit baud rate for terminals attached to the system through a DH11, DHV11, DZ11, or DZV11 variable-speed multiplexer. The recv argument is the baud rate at which characters are input to the computer from the terminal. The xmit argument is the baud rate at which characters are output to the terminal from the computer. You must specify both arguments when setting the speed. If you do not specify either argument, VMR will display the current settings.



**SET (Cont.)**

Valid baud rates for the DH11 are 0, 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, EXTA (user-specified baud rate A), and EXTB (user-specified baud rate B).

Valid baud rates for the DHV11 are 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, and 19200.

Valid baud rates for the DZ11 and DZV11 are 50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, and 9600.

If you have a DZ11 or DZV11, the receive and transmit baud rates must be the same because these multiplexers do not support split speeds.

/SUB=mname:sname[:base:size]

(RSX-11M systems only.) Establishes a subpartition. Subpartitions can only be established in user-controlled main partitions.

mname

The 1- through 6-character main partition name. The subpartition being defined becomes a subpartition in the named main partition.

sname

The 1- through 6-character subpartition name. The subpartition being defined becomes a subpartition of the main partition specified in mname.

base

The physical base address of the subpartition, specified as a number of 64-byte blocks.

size

The size of the subpartition, specified as a number of 64-byte blocks.

Base and size may be entered in any of the following formats; nnnn is a number to which the system applies a multiplication factor to determine the value used.

Format	Calculated Value
n	Octal (nnnn*100)
n.	Decimal (nnnn.*64.)
nK	Octal K (nnn*4000)
n.K	Decimal K (nnn.*2048.)

Valid ranges for calculated values are:

Octal	0<=base<10000	0<size<2000
Decimal	0.<=base<4096.	0.<size<1024.
Octal K	0K<=base<200K	0K<size<40K
Decimal K	0.K<=base<2047.K	0.K<size<32.K

Example:

Any of the following inputs for size will allocate a 2048(10)-byte subpartition.



## SET (Cont.)

40  
32.  
1K  
1.K

If base and size are omitted, VMR displays the current values for the named subpartition.

/NOSUB=mname:sname

Eliminates the specified subpartition from the main partition.

/SWPC[=nn]

Defines the number of clock ticks for a single Executive swapping interval. The parameter nn is in the range 0 through 45,568(10) and can be an octal value, or decimal if followed by a period (.). See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for more information.

When you omit the clock ticks specification, VMR displays the current value for the interval.

/SWPR[=nn]

Defines a priority range for Executive swapping. The parameter nn is in the range 0 through 127(10) and can be an octal value, or decimal if followed by a period (.). The highest number is the highest priority.

The value for the /SWPR keyword affects the installed priority of all tasks. Each task is initiated at its installed priority plus the value for nn (priority + nn). While the task is executing, its priority is decremented until it becomes the installed priority minus the value for nn (priority - nn). When the priority reaches this lower limit, the task is swapped out so that another task with a higher priority can execute. The priority for the new task changes in the same way. See the RSX-11M or RSX-11M-PLUS System Generation and Installation Guide for more information.

When you omit the range specification, VMR displays the current value for the priority range.

/SYSUIC[=uic]

Establishes the UIC for the system and all system tasks. The UIC has the format [g,m], where g and m are octal numbers that represent a group and member number, respectively. On most unmapped systems, the system UIC is [1,50]; on most mapped systems, the system UIC is [1,54]. These UIC values are the initial defaults on virgin systems.

The UIC specified with the /SYSUIC keyword also becomes the default UIC used by the LOAD command and the install-run-remove option of the MCR RUN command.

When you omit the UIC specification, VMR displays the current system UIC.



**SET (Cont.)**

/TERM=ttnn:[type]

(Full-duplex terminal driver only.) Establishes the terminal type of the specified terminal. When VMR sets the terminal type, it automatically sets the HFILL, VFILL, CRT, FORMFEED, and HHT characteristics for the terminal. The standard terminal types are as follows:

ASR33	LA30S	LA120	VT55	VT105
ASR35	LA34	LA180S	VT61	VT125
KSR33	LA36	VT05B	VT100	VT131
LA12	LA38	VT50	VT101	VT132
LA30P	LA100	VT52	VT102	

If you specify a terminal type that is unknown to VMR, VMR does not set any device characteristics for the terminal. However, VMR stores the value you have specified in the Unit Control Block (UCB).

When you omit the type parameter, VMR displays the terminal type of the specified terminal.

VMR also accepts an alternate form of the command. You can specify the terminal type and equate it to the desired terminal. This automatically associates certain characteristics of the particular terminal type with the specified terminal. (See the RSX-11M/M-PLUS I/O Drivers Reference Manual for a list of the implicit characteristics for each terminal type.) The command is in the format:

SET /term-type=TTnn:

where term-type is one of the standard terminal types. Note that the terminal types are mutually exclusive.

The half-duplex terminal driver also accepts the /term-type form of the command. However, the only legal terminal types for the half-duplex driver are /ASR33, /LA30S, and /VT05B. The command associates implicit characteristics of the terminal type with the specified terminal, but, unlike the full-duplex terminal driver, the types are not mutually exclusive.

The following list describes the effects of the keywords for the half-duplex terminal driver:

/ASR33	Converts lowercase letters to uppercase before they are output to the terminal.
/LA30S	Indicates that fill characters are used after a carriage return. The number of fill characters used depends on the current carriage position at the time the carriage return occurs.
/VT05B	Sets a vertical file of three nulls after a line feed on 60 Hz systems and of four nulls on 50 Hz systems.



## SET (Cont.)

/TOP=pname:value

Directs VMR to move the top boundary of the specified partition up or down the amount indicated by the value parameter. The keyword modifies the top boundary of a system-controlled partition even if the partition has tasks installed in it. If you modify the partition so that it becomes too small to hold the tasks installed in it, VMR displays a warning message but modifies the partition anyway.

pname

The 1- through 6-character alphanumeric partition name.

value

The number of 64-byte blocks.

The value parameter can be supplied in five formats: +value, -value, value, +\* or \*, and -\*.

+value

Moves the top boundary up by the specified amount. Moving the top boundary up makes the partition larger.

## NOTE

You can supply the value in the same units as the base and size parameters for the /PAR keyword.

-value

Moves the top boundary down by the specified amount. Moving the top boundary down makes the partition smaller.

value

Establishes the total partition size equal to the specified value by moving the top boundary.

+\* or \*

Moves the top boundary up as far as possible. This format causes the top boundary to move to the bottom boundary of the partition above it or to the top of memory if the partition is the top partition in memory.

-\*

Moves the top boundary down as far as possible. This format causes the top boundary to move down to the top of the first fixed task, common, or driver in the partition at the time the /TOP keyword is executed. If nothing is loaded into the partition, the partition assumes a size of one 64-byte block.



## SET (Cont.)

/TYPEAHEAD[=ttnn:[size]]

(Full-duplex terminal driver only.) Enables the typeahead option for the specified terminal. The terminal driver stores input characters in a buffer before passing them to a requesting attached task. Thus, characters input during periods between requests are not lost.

If size is specified (RSX-11M-PLUS systems that support kernel data space only), the typeahead buffer size is set accordingly. The value for size can be from 0 through 255(10). If you specify 0 or 1, the terminal will not have the typeahead option enabled (same effect as /NOTYPEAHEAD). The default for size is 86(10).

When you omit the terminal specification, VMR displays all the terminals that have the typeahead option enabled.

/NOTYPEAHEAD[=ttnn:]

(Full-duplex terminal driver only.) Disables the typeahead option for the specified terminal. The terminal driver does not store characters to prevent their loss because the size of the buffer is forced to 1.

When you omit the terminal specification, VMR displays all the terminals that do not have the typeahead option enabled.

/UIC[=uic]:ttnn:]

Establishes the specified UIC as the default UIC for the specified terminal (the default is TI:). All tasks run from the terminal are run with the UIC of the terminal, except in a multiuser protection system. In such a system, a privileged user can override the terminal UIC with the /UIC keyword of the RUN command. Furthermore, external MCR function tasks are requested with this UIC. These tasks are the MOUNT, INSTALL, DMO, and UFD commands (which run as tasks), and all system-supplied software.

When you specify only the terminal, VMR displays the UIC for that terminal.

/VFILL[=ttnn:]

(Full-duplex terminal driver only.) Enables the vertical fill characters option for the specified terminal. The terminal driver adds four fill characters following each line feed.

When you omit the terminal specification, VMR displays all the terminals on the system that have the VFILL option enabled.

/NOVFILL[=ttnn:]

(Full-duplex terminal driver only.) Disables the vertical fill characters option for the specified terminal. The terminal driver does not add any vertical fill characters following line feeds.

When you omit the terminal specification, VMR displays all the terminals on the system that do not have the VFILL option enabled.



## SET (Cont.)

/WCHK[=ddnn:]

Specifies for all Files-11 devices, except DX:, DY:, and magnetic tapes, that all write operations are to be followed by a write check. The checks assure the reliability of data transfers to the specified disk.

On RSX-11M, Executive support for write checking is a system generation option and must be selected for this command to have any effect. On RSX-11M-PLUS, support for write checking is always included.

When you omit the device specification, VMR displays all Files-11 disk drives with write checking enabled.

/NOWCHK[=ddnn:]

Specifies that write checking is to be disabled for the specified device.

When you omit the device specification, VMR displays all disks that support write checking but have the option disabled.

/WRAP[=ttnn:]

(Full-duplex terminal driver only.) Enables the wrap-around option for the specified terminal. The terminal driver automatically generates a carriage return/line feed sequence when the number of input characters exceeds the buffer size of the specified terminal. Both the carriage return and line feed are transparent and do not appear in the input buffer.

When you omit the terminal specification, VMR displays all the terminals on the system that have the wrap-around option enabled.

/NOWRAP[=ttnn:]

(Full-duplex terminal driver only.) Disables the wrap-around option for the specified terminal. The terminal driver does not accept input characters beyond the input buffer size for the terminal.

When you omit the terminal specification, VMR displays all the terminals on the system that have the wrap-around option disabled.

## Notes on Memory Allocation Keywords

1. If a command attempts to eliminate a partition in which tasks are installed or drivers loaded, VMR rejects the command until the tasks have been removed.
2. When you define a partition, the name must not already be defined as a partition. In addition, a partition cannot overlap any other partition.

On RSX-11M, subpartitions can overlap other subpartitions.

3. The address specified with the /POOL keyword must be lower than the base address of the first partition in the system.

On RSX-11M, an exception is the partition LDRPAR for a resident loader. LDRPAR is in the Executive.



## SET (Cont.)

4. Once you have allocated space to the dynamic storage region (pool), you cannot recover the space for use in partitions.
5. When the highest memory addresses of a system are allocated, the size of the partition is modified automatically to reflect the amount of memory present when the system is bootstrapped.
6. On RSX-11M-PLUS, SET /TOP and SET /BOT work correctly for secondary pool partitions.
7. If the last partition is system-controlled, its top address is modified by the SAVE command at boot time to reflect the actual top of physical memory of the hardware in use.

## Examples

VMR>SET /ABAUD=TT4:

Enables the autobaud detection option for TT4:.

VMR>SET /ABAUD

ABAUD=TT2:

ABAUD=TT4:

ABAUD=TT5:

Displays all the terminals that have the autobaud detection option enabled.

VMR>SET /BRO=TT5:

Enables the broadcast option for TT5:.

VMR>SET /BRO

BRO=TT2:

BRO=TT4:

BRO=TT5:

Displays all the terminals that have the broadcast option enabled.

VMR>SET /BUF=LP0:

BUF=LP0:132.

Displays the current buffer size of LP0:.

VMR>SET /BUF=TT1:40.

Sets the buffer size of TT1: to 40(10).

VMR>SET /CRT=TT3:

Enables the backwards deletion option on the display terminal whose number is TT3:.

VMR>SET /CRT

CRT=TT3:

CRT=TT7:

CRT=TT12:

Displays all the terminals that have the backwards deletion option enabled.



## SET (Cont.)

VMR>SET /ESCSEQ=TT3:

Establishes terminal TT3: as a terminal that can send and receive escape sequences.

VMR>SET /ESCSEQ

ESCSEQ=TT3:

ESCSEQ=TT7:

ESCSEQ=TT16:

Displays all the terminals that can send and receive escape sequences.

VMR>SET /NOESCSEQ=TT3:

Disables support of escape sequences for TT3:.

VMR>SET /LA30S=TT2:

VMR>SET /LA30S

LA30S=TT0:

LA30S=TT2:

Sets TT2: as an LA30S, then displays all LA30S terminals.

VMR>SET /NETUIC

NETUIC=[[20,3]]

Displays the current network UIC.

VMR>SET /NETUIC=[25,6]

Sets the network UIC to [25,6].

VMR>SET /OPT=DM1:NEAR

Enables I/O queue optimization for DM1:, using the NEAR algorithm.

VMR>SET /OPT

OPT=DB0:NEAR

OPT=DB1:NEAR

OPT=DM0:NEAR

OPT=DM1:NEAR

Displays all the disk devices that have I/O queue optimization enabled.

VMR>SET /PLCTL

PLCTL=1600.:600.:200.:51.

Displays the current pool limit parameters used by the Pool Monitor Task.

VMR>SET /PRIV=TT0:

Sets TT0: to be a privileged terminal.

VMR>SET /PRIV

PRIV=TT0:

PRIV=TT1:

Displays all privileged terminals.



## SET (Cont.)

VMR>SET /REMOTE=TT21:

Sets the terminal line corresponding to TT21: as a remote dial-in line.

VMR>SET /REMOTE  
 REMOTE=TT1:  
 REMOTE=TT2:  
 REMOTE=TT3:  
 REMOTE=TT4:  
 REMOTE=TT21:

Displays all the terminals that are currently set as remote dial-in lines.

VMR>SET /RNDC  
 RNDC=6.

Displays the current length of the round-robin scheduling interval.

VMR>SET /RNDC=10.

Sets the length of the round-robin scheduling interval to 10(10) ticks.

VMR>SET/SECPOL  
 SECPOL=285.:640:44%

Displays the amount of secondary pool currently being used.

VMR>SET /SLAVE=TT3:

Sets TT3: to be a slaved terminal.

VMR>SET /SWPR  
 SWPR=5.

Displays the current value for the Executive swapping priority range.

VMR>SET /SWPR=10.

Sets the Executive swapping priority range to 10(10).

VMR>SET /VT05B  
 VT05B=TT4:  
 VT05B=TT5:  
 VT05B=TT6:

Displays all VT05B terminals.

VMR>SET /WCHK=DK1:

Enables write checking on DK1:.

VMR>SET /PAR=SYSPAR:420:140:SYS

Defines a partition called SYSPAR whose base address is 42000(8) and whose length is 14000(8) bytes.



## SET (Cont.)

VMR>SET /NOPAR=SYSPAR

Eliminates the main partition SYSPAR.

VMR>SET /PAR=GEN:\*:~

Creates a partition named GEN, setting the base address as low as possible and making the partition as large as possible.

VMR>SET /POOL=420

Establishes the top of the dynamic storage region (pool). Following this command, no user-defined partition can begin below 42000(8).

VMR>SET /POOL

POOL=1200:11470.:11738.:2003

Shows that the last virtual address in the Executive is 120000, the longest free block is 11470(10) words, and the total of all pool space is 11738(10) words. The lowest physical address at which a partition can start is 2003 (32-word blocks).



# TAS

## TASKLIST

Use the TASKLIST command to display a description of each installed task in the system. The display contains several columns that give, from left to right, the following information:

1. Task name
2. Task version identification
3. Task Control Block address
4. Partition name
5. Task priority
6. Size of task in bytes (octal)
7. Load device identification
8. Disk address logical block number (in octal) on virgin systems, or the image or task file identification on saved systems
9. Task memory state (saved systems only)

On RSX-11M-PLUS, the display lists the tasks installed in primary pool and then those installed in secondary pool. The tasks in secondary pool are indicated by a plus sign (+).

## Format

TAS[KLIST][taskname]

## Parameters

taskname

The name of a single installed task, the description of which you would like to be displayed.

## Examples

This example is from a virgin system:

```
VMR>TAS
TKTN   03.14   035300 GEN    248. 00010000 LB0:-00631420
...MCR 01.01   035174 GEN    160. 00040000 LB0:-00630300
MCR... 3.3     035070 GEN    160. 00010000 LB0:-00627721
...INS 4       035614 GEN    100. 00040000 LB0:-00627333
...LOA 03.3    035510 GEN     50. 00040000 LB0:-00627643
...UNL 03.4    035404 GEN     50. 00040000 LB0:-00070512
VMR>
```

On a system image generated for a PDP-11/70 with more than 124K words of memory, the size field (sixth column) contains 8-digit rather than 6-digit numbers.



## TAS (Cont.)

This example is from a saved system:

```
VMR>TAS
LDR... 08.03    034210 LDRPAR  248. 00003000 LB0:- FILE ID:(1111,12) FIXED
TKTN   03.14    115424 GEN    248. 00010000 LB0:- FILE ID:(31540,27)
MTAACP 0010     115214 GEN    200. 00013500 LB0:- FILE ID:(31461,24)
MCR... 3.3      116464 SYSPAR 160. 00010000 LB0:- FILE ID:(31454,12)
...DCL 0113A    115634 GEN    160. 00040000 LB0:- FILE ID:(31344,53)
DCL... 0113A    115530 GEN    160. 00010000 LB0:- FILE ID:(31345,5)
...MCR 01.01    036770 GEN    160. 00040000 LB0:- FILE ID:(30546,34)
...MOU 23.00    036250 GEN    160. 00040000 LB0:- FILE ID:(5424,15)
F11ACP M0320    117674 GEN    149. 00065700 LB0:- FILE ID:(30101,47)
DB00F1 M0320    117570 GEN    149. 00065700 LB0:- FILE ID:(31370,6)
COT... X00.01   117360 GEN    145. 00015400 LB0:- FILE ID:(31336,120)
...DMO 23.00    117254 GEN    140. 00040000 LB0:- FILE ID:(31346,23)
...INI 20.01    116674 GEN    140. 00040000 LB0:- FILE ID:(31424,55)
...UFD V0410    116044 GEN    140. 00040000 LB0:- FILE ID:(31541,34)
PMD... 3.1      114630 GEN    140. 00023600 LB0:- FILE ID:(31464,70)
HRC... 01.01    036560 GEN    140. 00050400 LB0:- FILE ID:(31240,21)
SHF... 03.01    115320 SYSPAR 105. 00010000 LB0:- FILE ID:(31521,40)
FXR... 01       117104 GEN    100. 00003100 LB0:- FILE ID:(31371,113)
...INS 4        116570 GEN    100. 00027700 LB0:- FILE ID:(31435,12)
...SAV 04.35    116254 TSTPAR 100. 00040000 LB0:- FILE ID:(31475,5)
SAVTO  04.35    036130 TSTPAR 100. 00040000 LB0:- FILE ID:(31475,5)
...PRV 4.30     036664 GEN    100. 00040000 LB0:- FILE ID:(3433,163)
...AT. 04.25    037254 GEN    65. 00057700 LB0:- FILE ID:(31421,131)
...BOO 04.08    117464 GEN    50. 00040000 LB0:- FILE ID:(31323,6)
...ACS 01.1     115740 GEN    50. 00040000 LB0:- FILE ID:(31321,73)
...HEL 01.25    037360 GEN    50. 00044100 LB0:- FILE ID:(31416,15)
VMR>
```

The display for a saved system differs from the display for a virgin system in that the file-ID of the task file, rather than the logical block number, is displayed.

FIXED indicates that the task is fixed in memory.

This example is from an RSX-11M-PLUS saved system that has tasks installed in secondary pool:

```
VMR>TAS
.
.
.
BAPO   02       113440 GEN    80. 00045700 LB0:- FILE ID:(4332,27)
QMG... 1.7      112450 GEN    75. 00031400 LB0:- FILE ID:(4366,2)
LPO    1.9      112734 GEN    70. 00015400 LB0:- FILE ID:(4354,135)
LP1    1.9      112604 GEN    70. 00015400 LB0:- FILE ID:(4354,135)
SHC... 01.01    110600 GEN    60. 00051700 LB0:- FILE ID:(4360,2)
SHUTUP 02       110320 GEN    50. 00011200 LB0:- FILE ID:(4320,65)
...DMO 23.20    006025+ GEN    160. 00015500 LB0:- FILE ID:(4167,35)
...MCR 2.4      006037+ GEN    160. 00032000 LB0:- FILE ID:(2132,227)
...MOU 2502     006041+ GEN    160. 00040000 LB0:- FILE ID:(4205,13)
...DCL 00       006130+ GEN    160. 00035600 LB0:- FILE ID:(2535,1525)
.
.
.
```



**TIM****TIME**

Use the TIME command to set the time of day and the date or to display the time and date.

**Formats**

TIM[E] [hrs:mins[:secs]] [m1/day/year]

or

TIM[E] [hrs:mins[:secs]] [day-m2-year]

**Parameters**

hrs

Hours (range 0 through 23).

mins

Minutes (range 0 through 59).

secs

Seconds (range 0 through 59). This parameter is optional; the default is zero.

m1

Numeric representation of month (range 1 through 12).

m2

Three-letter abbreviation for month.

day

Day (range 1 through 31).

year

Year (range 0 through 99). Year is relative to 1900; thus, 1983 is entered as 83.

**Examples**

```
>TIM
10:23:31 03-FEB-83
```

Displays the current system image time and date.

```
>TIM 14:30 4/11/83
```

Sets the time to 14:30:00 and the date to 11-APR-83.



## TIM (Cont.)

### Notes

1. If you specify neither time nor date, VMR displays the current system image time and date.
2. If you specify the time and date, VMR sets the system image clock and calendar. If you specify only the time, VMR sets only the clock; if you specify only the date, VMR sets only the calendar.
3. You can specify the time and date in any order.
4. The form used to specify the date does not affect the display format. The date is always displayed as day-month-year.
5. All numeric values are decimal. No terminating period is required.



## UNF

### UNFIX

Use the UNFIX command to free a fixed task from the virtual memory of the system image. UNFIX is the complement of the FIX command.

If a fixed task exits or aborts, it still occupies the physical memory in the partition.

#### Format

```
UNF[IX] taskname[/keyword]
```

#### Parameters

taskname

The task that you want to unfix from memory.

/keyword

One of the following keywords (RSX-11M-PLUS systems only):

/REG

/RON

#### Keywords

/REG

Specifies that the task to be unfixed is a common region.

/RON

Specifies that the task is a multiuser task, the read-only segment of which is to be unfixed from memory.

#### Example

```
VMR>UNFIX XKE
```

Unfixes task XKE, freeing the partition in which it resides.



**UNL****UNLOAD**

Use the UNLOAD command to remove a loadable device driver from the system image. If a device is attached, its driver cannot be unloaded.

To unload a device driver from the system image, the driver's symbol definition file must reside on LB: under the same UFD as the UFD of the system image file. By convention, the system UIC is [1,50] for an unmapped system and [1,54] for a mapped system.

The UNLOAD command cannot remove a loadable data base from the system image, even if the data base was loaded by means of the LOAD command.

**Format**

UNL[OAD] dd:

**Parameter**

dd:

A 2-character ASCII device name

**Example**

VMR>UNL LP:

Unloads the line printer driver (LPDRV).



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

### 10.6 VMR ERROR MESSAGES

The following are the VMR command error messages. Although just the text of the messages is given here, the messages actually appear in one of the following formats:

VMR -- \*DIAG\* message

VMR -- message

VMR -- \*FATAL\* message

A diagnostic message usually indicates that something unexpected may have happened, but it does not interfere with VMR's operation.

An unmarked message usually indicates that VMR rejected the command line. If the offending line is in an indirect command file, VMR ignores the rejected line and attempts to execute the remaining command lines.

A fatal message also indicates that VMR rejected the command line. In this case, however, VMR either exits or resets itself to the beginning (that is, ENTER FILENAME:). If the offending line is in an indirect command file, VMR aborts without attempting to execute the remaining command lines.

VMR -- Access to common block denied

Explanation: You attempted to install a task that has specified illegal access to a shared region.

VMR -- Addressing extensions not supported

Explanation: You attempted to install a task that was built using the VSECT (virtual section) directive into a system image that does not support the VSECT feature.

VMR -- Alignment error

Explanation: The base address or size of the partition being created with the SET command conflicts with existing partitions or physical memory.

VMR -- Base address must be on a 4K boundary

Explanation: The virtual base address of the task being installed is not aligned on a 4K boundary.

VMR -- Base mismatch common block <commonname>

Explanation: The base address of the partition does not match that of the common block.

VMR -- Cannot fix an I/D space task

Explanation: You attempted to fix a task that is built with I- and D-space. Such tasks cannot be fixed.

VMR -- Cannot fix a task in a system controlled partition

Explanation: This is a VMR restriction. To fix a task in a system-controlled partition, use the MCR FIX command and then save the system image.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Cannot have multiple pool or CPU partitions

**Explanation:** You attempted to create a secondary pool partition in a system that already has one. There can be only one secondary pool partition in a system.

VMR -- Cannot install tasks or commons from other than LB:

**Explanation:** SAVE does not allow saving of a system that has tasks and/or commons that were not installed from the library device LB:. Therefore, a task or common cannot be installed from other than LB:.

VMR -- Cannot LOAD/UNLOAD a pseudo device

**Explanation:** When loading or unloading a device driver, the physical name of the driver must be specified.

VMR -- Cannot UNFIX a mapped common region

**Explanation:** You attempted to unfix a common region that is currently mapped by a task.

VMR -- Cannot UNFIX the directive common

**Explanation:** RSX-11M-PLUS directive commons can be removed but not unfixed. Because directive commons are merged with DIR11M as they are fixed, the size of a particular common is unknown.

VMR -- Checkpoint area too small

**Explanation:** The area allocated for checkpointing in the task image file is smaller than the partition into which the task is being installed. The system image does not support the dynamic allocation of checkpoint space.

VMR -- Checkpoint space too small, using checkpoint file

**Explanation:** This is a warning message. The checkpoint space allocated in the task image file is too small to hold the task (usually because of the /INC keyword). The system image supports the dynamic allocation of checkpoint space. It will use the checkpoint file to store the task when it rolls it out to disk. Since no checkpoint file exists when the system is booted, you should consider this message to be a fatal error if it is issued by any of the system tasks while the system is being booted. These tasks are MCR, MOU, and F11ACP.

VMR -- Circular redirect error

**Explanation:** The attempt to redirect a device failed because it would result in a circular device list.

VMR -- Command I/O error

**Explanation:** The system detected an I/O error during a read from an indirect command file.

VMR -- Command syntax error <command-line>

**Explanation:** The syntax of the command line is incorrect.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Common block currently installed

**Explanation:** You attempted to install a common block that has already been installed.

VMR -- Common block is task partition <commonname>

**Explanation:** A task's request for access to a common block has been rejected because the requested partition is a task partition.

VMR -- Common block not loaded <commonname>

**Explanation:** The common block specified by VMR in the error message has been linked to the task, but the common block has not yet been installed.

**User Action:** The common block must be installed before the task can be installed.

VMR -- Common block occupied

**Explanation:** You attempted to install a task in a common block that was already occupied.

VMR -- Common block parameter mismatch <commonname>

**Explanation:** The parameters of the common block named in the error message do not match the parameters in the label block of the task that references the common block.

VMR -- Common block segment count error

**Explanation:** You attempted to install a resident library with overlays, but the number of overlay segments in the task header differs from the number specified in the segment descriptors.

VMR -- CTB <name> does not exist

**Explanation:** The Controller Table name that you specified with the LOAD /CTB keyword does not exist in the resident data base.

VMR -- CTB name <name> is a duplicate

**Explanation:** The loadable data base contains a Controller Table (CTB) with a name that is the same as a CTB name in the resident data base. CTB names must be unique.

VMR -- CTB <name> not supported by driver -- not loaded

**Explanation:** This is a warning message. Two things could be at fault:

1. The Driver Dispatch Table in the driver does not have all the Controller Table mnemonics that the rest of the data base (that is, DCBs and CTBs) implies that it should have.
2. The CTB is defective. A defective CTB may contain a wrong name or it may point at the wrong DCB.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Data space file exceeds available space in system image

**Explanation:** The RSX11M.SYS files are not large enough to contain the data space file DSP11M.SYS.

VMR -- DCB table for CTB <name> is full

**Explanation:** LOAD attempted to write the address of the Device Control Block (DCB) of the loadable data base into the DCB table of the Controller Table for a multicontroller device. There were no null entries in the DCB table. (See the RSX-11M-PLUS Guide to Writing an I/O Driver.)

VMR -- Device <ddnn:> is attached

**Explanation:** You attempted to unload a driver that has one or more of its device units attached. The first attached unit is ddnn:. You cannot unload a driver that has device units attached.

VMR -- Device <ddnn:> is not in system

**Explanation:** This message can occur for the following reasons:

1. You attempted to save an image on a device that does not exist on the host system.
2. You attempted to redirect I/O requests to a device that does not exist on the host system.
3. You specified a device in the LOAD command line for which there is no data base. This is caused by one of two conditions:
  - a. The device does not exist in the system device tables.
  - b. You did not declare the device to be loadable and therefore LOAD cannot find a loadable data base for it.
4. You specified a device in the command line that has not been defined in the system image.
5. You specified a device in the DEVICES command line that does not exist in the system image.

VMR -- Device not mounted

**Explanation:** You did not mount the device that contains the system image file.

VMR -- Device not redirectable

**Explanation:** You attempted to redirect a device that is marked (in its UCB) as not redirectable.

VMR -- Device not terminal

**Explanation:** You attempted to set terminal characteristics for a device that is not a terminal.



# VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Device not variable speed multiplexer

**Explanation:** You attempted to set the baud rate for a terminal that is not attached to a DH11, DHV11, DZ11, or DZV11 multiplexer.

VMR -- Directive common already loaded

**Explanation:** You attempted to fix in the RSX-11M-PLUS system image a directive common that is already fixed.

VMR -- Directive common not contiguous to DIR11M

**Explanation:** Directive commons must be loaded contiguous to DIR11M to work.

VMR -- Directive common(s) not fixed in memory

**Explanation:** Not all of the directive commons that were installed in the RSX-11M-PLUS system image have been fixed.

VMR -- Driver already resident

**Explanation:** You attempted to load a device driver that is already loaded or that is permanently resident in the system image.

VMR -- Driver built with wrong STB file

**Explanation:** The symbol definition file for the driver you attempted to load is not compatible with the Executive symbol definition file for the current system image. This means that the driver has been built for another system and must be rebuilt before you can load it into the current system.

**Explanation:** The symbol definition file for the driver you attempted to unload is not compatible with the symbol definition file of the current Executive.

VMR -- Driver cannot be unloaded

**Explanation:** You attempted to unload a permanently resident driver (that is, a driver linked permanently to the Executive).

VMR -- Driver dispatch table is inconsistent

**Explanation:** You attempted to load a driver whose driver dispatch table is illegally formatted. See the RSX-11M or RSX-11M-PLUS Guide to Writing an I/O Driver.

VMR -- Driver not loaded

**Explanation:** You specified a driver in the UNLOAD command line that is not resident in memory.

VMR -- Driver requires running system for LOAD/UNLoad

**Explanation:** The driver you requested has the symbols \$ddLOA or \$ddUNL in its source. Support of driver load/unload calls can only be provided by the MCR LOAD/UNLOAD commands.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Executive common partition eliminated

**Explanation:** This is a warning message. One of the executive common partitions has been removed. A system generated with executive common support must have both partitions installed to run.

VMR -- Executive common(s) not installed

**Explanation:** This is a warning message. For a system generated with executive common support, you should install one (or both) of the commons before you exit VMR. Otherwise, the system is unusable.

VMR -- Executive too large

**Explanation:** The Executive is too large to be accommodated in the system image. This message indicates that the Executive is larger than 20K. The system is unusable.

VMR -- External headers not supported

**Explanation:** You attempted to install a task built with external headers in a system that was not generated with external header support.

VMR -- Feature not supported in system image

**Explanation:** You either attempted to create secondary pool in a system that does not support it, or you attempted to set a device public in a system that does not support multiuser protection, or you attempted to enable/disable the broadcast option for a terminal, but the system is not a multiuser/multi-CLI system.

VMR -- File <name> has illegal format

**Explanation:** The driver's symbol definition file contains illegal object code or data.

VMR -- File <name> has inconsistent data

**Explanation:** This message can occur for the following reasons:

1. You attempted to fix a partition or a task that is logically beyond the end of the system image file.
2. The partition for loadable drivers is logically beyond the end of the system image file. The system image is probably corrupt.
3. The partition of the common library you are attempting to load is logically beyond the end of the system image file.

VMR -- File <name> not a valid driver task image

**Explanation:** One of three things has occurred:

1. The driver's task image has been overlaid.
2. The driver has a header.
3. The driver has referenced a resident library.



# VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- File not contiguous

**Explanation:** This message can occur for the following reasons:

1. You attempted to install a task from a noncontiguous file. Task images must be contiguous files.
2. The file ddDRV.TSK is not contiguous. This file must be contiguous for a device driver to be loaded.

VMR -- File not found

**Explanation:** You requested a file that is not in the directory of the volume you specified.

VMR -- File not task image

**Explanation:** The data in the label block of the task you tried to install is incorrect, indicating that the file is not a task image.

VMR -- Illegal device/volume

**Explanation:** You attempted to save your system image on an invalid device. Valid devices are:

CT: Tape cassette

DD: TU58 DECTape II

DT: DECTape

DU: RX50 flexible disk/RA60 disk/RC25 disk (removable)

DX: RX01 flexible disk

DY: RX02 flexible disk

MM: TE/TU16/TU45/TU77 magnetic tape

MS: TS11/TSV05/TU80 magnetic tape

MT: TE/TU10/TS03 magnetic tape

PP: Paper tape

VMR -- Illegal driver task APR usage

**Explanation:** The device driver being loaded must be built for APR 5 and must be less than 4K words.

VMR -- Illegal error severity code <code>

**Explanation:** This message indicates an internal failure in VMR. If this error message persists, contact a DIGITAL software representative.

VMR -- Illegal file specification <filespec>

**Explanation:** The file specification printed following the error message has an illegal format or contains wildcards.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

### VMR -- Illegal first APR

**Explanation:** The task you tried to install was built using an incorrect base APR. The following rules apply:

1. A nonprivileged task must be built with APR 0 as its base APR.
2. A privileged task that does not map into the Executive must be built with APR 0 as its base APR.
3. If the Executive is 16K words or less, a privileged task that is to map to the Executive routines and data structures must be built with APR 4 as its base APR.
4. If the Executive is 20K words (or less on RSX-11M systems), a privileged task that is to map to the Executive routines and data structures must be built with APR 5 as its base APR.

### VMR -- Illegal function

**Explanation:** You entered a command that VMR does not recognize, or the command line refers to a feature that is not supported in the system.

### VMR -- Illegal Get Command Line <error code>

**Explanation:** This message indicates a system failure. If the error persists, contact a DIGITAL software representative.

### VMR -- Illegal keyword value

**Explanation:** You entered a value for a keyword that is out of range.

### VMR -- Illegal operation for unmapped system

**Explanation:** The SET /POOLSIZE keyword is valid only on mapped systems.

### VMR -- Illegal parameter for executive common partition

**Explanation:** You specified a parameter with SET /MAIN that is illegal for an executive common. The partition size must be 200(8) and the partition type must be COM.

### VMR -- Illegal priority

**Explanation:** You specified a priority for the task being installed that is out of range (that is, not 1 through 250 decimal).

### VMR -- Illegal slave attribute

**Explanation:** You attempted to install a task with the /SLV keyword, but the task's name is in the form ...xxx. The task is a prototype task and cannot be installed as a slaved task.

### VMR -- Illegal switch <switch>

**Explanation:** The switch following the error message is incorrect in the context of the command line you have entered.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Illegal use of <pname> partition or common

**Explanation:** You attempted to install a task in a CPU or secondary pool partition.

VMR -- Illegal use of <pname> partition or region

**Explanation:** You attempted to load a driver into a common or secondary pool partition.

VMR -- Illegal use of wildcard

**Explanation:** On an unmapped system, you cannot specify a wildcard (\*) with the following SET keywords: /TOP, /BOT, and /POOL. You also cannot use a wildcard for the size parameter of task partitions.

VMR -- Illegal value for symbol <symname> in file <filename>

**Explanation:** LOAD or UNLOAD has determined that symbol <symname> in the STB <filename> has been defined to an illegal value. This can occur for several reasons, some general and some specific to individual symbols. For example, most symbols generally cannot be defined to zero or to an odd number. A specific example is the symbol \$INTSV, which must not be referenced by mapped loadable drivers.

VMR -- Incorrect assignment of SY: or LB:

**Explanation:** This is a warning message. The device SY: or LB: is not assigned to the same device as the system image file you are trying to work with in VMR.

VMR -- Indirect command syntax error <command-line>

**Explanation:** You entered an improper indirect command file specification.

VMR -- Indirect file depth exceeded <command-line>

**Explanation:** You attempted to reference more than two levels of indirect command files.

VMR -- Indirect file open failure <command-line>

**Explanation:** The indirect command file specified in the command line could not be opened.

VMR -- Install device not LB0:

**Explanation:** You attempted to install a task from other than the boot device.

VMR -- Installed tasks or commons may no longer fit in partition

**Explanation:** You shortened a partition so that the tasks and/or commons that are installed in it may no longer fit. This is a warning message. VMR shortens the partition even though this situation exists.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Interrupt vector already in use

**Explanation:** The interrupt vector for the driver being loaded does not point to one of the nonsense interrupt entry points in the system image.

VMR -- Invalid driver data base at offset xxxx in file <filename>

**Explanation:** The driver name has an invalid data base value at offset xxxx relative to the symbol \$ddDAT. (See the RSX-11M or RSX-11M-PLUS Guide to Writing an I/O Driver).

VMR -- Invalid interrupt vector

**Explanation:** You specified an interrupt vector address in the driver data base that is too high for the system image.

VMR -- Invalid keyword

**Explanation:** You specified a keyword that is incorrect in the context of the command.

VMR -- Invalid record address for file <filename>

**Explanation:** LOAD has attempted to write outside of the system image file or at a byte boundary. Three possible causes are:

1. A corrupted system image
2. An STB file that does not match the system image
3. An internal problem in VMR

VMR -- Invalid speed

**Explanation:** This message can occur for two reasons:

1. You requested a speed that the multiplexer line you specified does not support.
2. You specified unequal receive and transmit speeds for a DZ11 or DZV11. The DZ11 and DZV11 multiplexers do not support split speeds.

VMR -- Invalid time parameter

**Explanation:** The time field you specified in the RUN command line is incorrect.

VMR -- Invalid UIC

**Explanation:** You specified an illegal value for either a group number or a member number. The numbers must be from 1 through 377(8).

VMR -- I/O error on input file <filename>

**Explanation:** An input I/O error occurred on the indicated file.

VMR -- I/O error on output device

**Explanation:** SAVE has encountered an I/O error on the output device while writing the system image.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- I/O error on output file <filename>

**Explanation:** An output I/O error occurred on the indicated file.

VMR -- Keyword not supported for this terminal driver

**Explanation:** The terminal driver selected during system generation does not support the specified SET keyword. For example, typeahead is a full-duplex terminal driver option only and your system uses the half-duplex driver.

VMR -- KRB <KRBname> interrupt vector <octal-number> in use

**Explanation:** You attempted to load a driver that specifies an interrupt vector that is not pointing to a nonsense interrupt entry point address. This is usually caused by a previously loaded driver that has used this vector.

When you get this message, LOAD has loaded the driver correctly, but it has not overwritten the interrupt vector.

VMR -- KRB <KRBname> interrupt vector <octal-number> too high

**Explanation:** You attempted to load a driver that specifies an interrupt vector address that is higher than the highest permissible vector address in the system.

When you get this message, LOAD has loaded the driver correctly, but it has not overwritten the interrupt vector.

VMR -- KRB <KRBname> not in loadable data base

**Explanation:** You attempted to load the driver for a multicontroller device with a loadable data base. The special symbol (KRBname) that defines the location of the KRB in the multicontroller device's CTB table is not defined in the loadable data base. See the RSX-11M-PLUS Guide to Writing an I/O Driver.

VMR -- KRB table of CTB <CTBname> will not accept KRB <KRBname>

**Explanation:** You attempted to load the driver for a multicontroller device with a loadable data base. If this operation is to be successful, two conditions must exist:

1. The appropriate slot in the CTB (Controller Table) must exist.
2. The slot in the CTB must be unused.

When VMR issues this error message, one of these conditions does not exist. See the RSX-11M-PLUS Guide to Writing an I/O Driver.

VMR -- Length mismatch common block <blockname>

**Explanation:** The length parameter for the common block, as described in the label block for the task image, does not match the corresponding length parameter defined in the system image. A task's label block data must match system data for that task before it can be installed.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Line not DZ11

**Explanation:** You attempted to set a line to remote that is not attached to a DZ11, but your system uses the half-duplex terminal driver.

VMR -- Loadable driver larger than 4K

**Explanation:** This is a warning message. You are loading a driver that is larger than 4K words.

VMR -- Loadable driver support not in system

**Explanation:** You attempted to load a device into a system image that does not contain the Executive routine \$INTSI. The routine is needed to support loadable device drivers.

VMR -- Logical device not in system

**Explanation:** The device you specified has not been defined and therefore ASSIGN could not find it in the logical device assignment table.

VMR -- LUN out of range

**Explanation:** You attempted to reassign a LUN for a task that is higher than the maximum number of LUNs allocated for the task when it was built.

VMR -- No checkpoint space, assuming not checkpointable

**Explanation:** This is a warning message. You attempted to install a task as checkpointable that was not built as checkpointable. This means that there is no checkpoint space allocated in the task image file. Since the system image does not support the dynamic allocation of checkpoint space, INSTALL does not consider the task to be checkpointable.

VMR -- No checkpoint space or dynamic checkpoint file

**Explanation:** You attempted to install a task built with external headers or as checkpointable, but the task does not have any checkpoint space and the system does not have a checkpoint file.

VMR -- No LUNs

**Explanation:** The task that you specified as an argument of the LUN command does not have any logical units assigned to it. This is not an error message; rather, it is simply an indication that there are no assignments to display.

VMR -- No pool space

**Explanation:** The pool space required to load the driver is not available in the system image.

VMR -- No room available in STD for new task

**Explanation:** There is no dynamic storage available to make an entry in the System Task Directory (STD). The task cannot be installed.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- No table space for optional directive common

**Explanation:** You attempted to fix a directive common in the RSX-11M-PLUS system image, but the extra slots built into the system data base for unrequired directive commons have all been used.

VMR -- Nonexistent memory

**Explanation:** You attempted to define a partition in nonexistent memory.

VMR -- Not enough APRs for task image

**Explanation:** The Task Builder allows you to specify the virtual base address of a task image as a multiple of 4K. Privileged tasks that access the Executive start at either virtual address 100000(8) for a 16K Executive or at virtual address 120000(8) for a 20K Executive. If the virtual base address of the task is set too high, there are not enough APRs remaining to map the task image. (See the RSX-11M/M-PLUS Task Builder Manual for information on privileged tasks.)

VMR -- Old device attached

**Explanation:** You attempted to redirect an attached device.

VMR -- Open failure on file <filename>

**Explanation:** The indicated file cannot be opened.

VMR -- Operation cannot extend above first 124.K of memory

This message can occur for the following reasons:

1. On RSX-11M, you attempted to fix a task above 124K words. The largest system that can be saved is 124K words. If FIX allowed you to fix a task above this limit, the task would be lost when the system was saved.
2. You attempted to create with the SET command a CPU partition whose upper limit is above 124K words.

VMR -- Operation not allowed for <ptype> partitions

**Explanation:** You attempted a SET operation that is not allowed for the type of partition specified in the error message.

VMR -- Optional directive common successfully loaded

**Explanation:** VMR has successfully fixed in the system image a directive common that is not one of the commons required by RSX-11M-PLUS (DIR11M and DR211M).

VMR -- Partition already exists

**Explanation:** This message can occur for the following reasons:

1. You attempted to define a partition, using the SET command, with a name already in use as a partition name.
2. You attempted to define a subpartition, using the SET command, but there are no more subpartition slots available.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Partition or common region is busy

**Explanation:** This message can occur for the following reasons:

1. You attempted to fix a task or common region in a partition that is full. The task or region cannot be fixed.
2. You attempted to load a device driver into a partition, but the partition is full.
3. You attempted to remove a partition that still has tasks installed in it. The partition cannot be removed.

VMR -- Partition <pname> is a common

**Explanation:** You attempted to load a device driver into a common partition. This cannot be done.

VMR -- Partition <pname> is not a common

**Explanation:** Partition <pname> was found, but it is not a common partition.

VMR -- Partition <pname> is too small

**Explanation:** You attempted to load the driver into a partition that is either too small for the driver or that does not currently have enough space for the driver. Or, you attempted to install a task that is too large for the specified partition.

VMR -- Partition <pname> not in system

**Explanation:** This message can occur for the following reasons:

1. The partition you specified in the command line is not in the system image.
2. You attempted to load a driver into a partition that does not exist in the system, or LOAD found a symbol \$xxCOM in the driver and partition xxCOM does not exist in the system.

VMR -- Partition <pname> not in system, defaulting to GEN

**Explanation:** This is a warning message. You attempted to install a task in a partition that does not exist. VMR will try to install the task in the partition GEN.

VMR -- Partition not system controlled

**Explanation:** The SET command keywords /TOP and /BOT are valid only for system-controlled partitions.

VMR -- Partition reduced to executive common size

**Explanation:** This is an informational message. When an executive common is installed in its partition, the partition is reduced to the top of the common to eliminate any unused space in the partition.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Privileged task overmaps I/O page

**Explanation:** This message pertains to the installation of a privileged task.

A privileged task that is mapped into the Executive is often mapped to the I/O page as well. However, many privileged tasks do not require access to the I/O page and can use the extra 4K of address space that would be allocated to the I/O page for the task image. This message warns that a privileged task that may require access to the I/O page does not have that access. If the task does not require access to the I/O page, this message can be ignored.

VMR -- Privileged task larger than 12K

**Explanation:** You attempted to install a privileged task that is larger than 12K words. (See the RSX-11M/M-PLUS Task Builder Manual for information on privileged tasks.)

VMR -- Pool link error at xxxx Block=yyyy zzzz

**Explanation:** When SET /POOL traced the pool linkage, it detected an error at location xxxx in the system image. The contents of xxxx is yyyy and the contents of xxxx+2 is zzzz.

VMR -- Pseudo device assignment error

**Explanation:** You attempted to assign a logical device name to a pseudo device. Logical device names cannot be assigned to pseudo devices.

VMR -- Pseudo device redirect error

**Explanation:** You attempted to redirect one pseudo device to another pseudo device. This is not allowed.

VMR -- R/O partition <pname> not in system, defaulting to task's

**Explanation:** You specified a read-only partition that does not exist in the system. INSTALL will place the read-only portion of your multiuser task into the same partition as the read/write portion of the task.

VMR -- Receive data or by reference list not empty

**Explanation:** A task with entries in its receive queues cannot be removed from the system image.

VMR -- Space used

**Explanation:** You attempted to create a partition in a storage area that is already occupied.

VMR -- Specified partition for common block

**Explanation:** You attempted to install a task in a common block.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Specified partition too small

**Explanation:** This message can occur for the following reasons:

1. You attempted to install a task into a partition that is smaller than the task.
2. You attempted to install a driver into a partition that is smaller than the driver.

VMR -- Symbol <symname> is doubly defined by file <filename>

**Explanation:** The symbol symname is defined twice in the specified file. Duplicate symbols are illegal. The driver is not loaded or unloaded.

VMR -- Symbol <symname> is undefined in file <filename>

**Explanation:** LOAD found the symbol symname in the specified file, but the symbol is not defined.

VMR -- Syntax error

**Explanation:** You have typed the command line incorrectly.

VMR -- System image is not RSX-11M-PLUS

**Explanation:** You attempted to use RSX-11M-PLUS VMR on a non-RSX-11M-PLUS system image file.

VMR -- System image is RSX-11M-PLUS

**Explanation:** You attempted to use RSX-11M VMR on an RSX-11M-PLUS system image file.

VMR -- Task active

**Explanation:** The task you specified as an argument of the command is active.

VMR -- Task and partition bases mismatch

**Explanation:** The base of the partition does not match that of the task being installed or of the driver being loaded. This message applies only to unmapped systems.

VMR -- Task or common region already fixed

**Explanation:** You attempted to fix a task or common region in memory that is already fixed.

VMR -- Task has attached common regions

**Explanation:** This message can occur for the following reasons:

1. You attempted to fix or unfix a task in memory that is linked to a shared region. VMR cannot fix or unfix such tasks.
2. You attempted to remove a task that is linked to a shared region from the system image. VMR cannot remove such tasks.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Task image currently installed

**Explanation:** You attempted to install a checkpointable task that has checkpoint space allocated in its task image. The task has already been installed.

The system allows you to install checkpointable tasks more than once subject to the following rules:

1. You must allocate checkpoint space for the task in a system checkpoint file, or
2. You must use a different name for the task each time you install it.

VMR -- Task image I/O error

**Explanation:** The task cannot be installed or the driver cannot be loaded. VMR could not read the task image file or could not rewrite the task image header. The specified device may be write-locked.

VMR -- Task image virtual address overlaps common block <blockname>

**Explanation:** The virtual addresses you reserved for the task image overlap those you reserved for the common block specified in the error message. Corruption of the task image file may have caused the overlap.

VMR -- Task is checkpointable

**Explanation:** You attempted to fix a checkpointable task in memory. Checkpointable tasks cannot be fixed.

VMR -- Task is not multi-user

**Explanation:** You attempted to fix in memory the read-only portion of a multiuser task, but the task you named in the command line is not a multiuser task.

VMR -- Task name already in use

**Explanation:** You attempted to install a task of the same name as that of one already installed in the system image.

VMR -- Task not installed with external header

**Explanation:** This is a warning message to indicate that the specified task is installed with its header in pool (the dynamic storage region).

VMR -- Task not in system

**Explanation:** You referenced a task that is not installed in the system.

VMR -- Task not removed, CLI has messages enabled

**Explanation:** You attempted to remove a CLI task that is able to receive messages from the system. The task may have messages that it has not received yet, so the remove request is aborted.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- Task or common not in memory

**Explanation:** You attempted to remove a task or common from the system that is checkpointed and, therefore, not in memory.

VMR -- Task or common region is not fixed

**Explanation:** You attempted to unfix a task that is not fixed in the system image.

VMR -- Task or common region not in system

**Explanation:** You referenced a task or common region that has not been installed in the system or, on RSX-11M-PLUS, you attempted to run a prototype task.

VMR -- Task requires system controlled partition

**Explanation:** You attempted to install a task that was built with external header (/XH) support and as checkpointable (TKB /CP, INS /CKP=YES). Such tasks must be installed in a system-controlled partition.

VMR -- TI redirect error

**Explanation:** You attempted to redirect the pseudo device TI:. TI: cannot be redirected.

VMR -- TT redirect error

**Explanation:** You attempted to redirect a terminal to the null device. This combination is not allowed.

VMR -- Too many common block requests

**Explanation:** You attempted to install a task that contains too many common block requests. A task is limited to seven common block references.

VMR -- Too many LUNs

**Explanation:** You attempted to install a task that contains more than 250(10) LUN assignment requests.

VMR -- Too many symbols of the form \$xxTMO in file name

**Explanation:** LOAD is attempting to extract symbols of the form \$xxTMO from the driver's symbol definition file. There are more symbols of this form than LOAD can process.

VMR -- Top of pool set to <value>, requested amount not available

**Explanation:** You requested more pool space than the system can provide. The system provides as much as possible in this case.

VMR -- Undefined common block <blockname>

**Explanation:** You attempted to install a task that references a common block that is not defined in the system image. This message may indicate that the task was built for another system.

VMR -- Unknown partition

**Explanation:** You attempted an operation on a partition that does not exist in the system.



## VIRTUAL MONITOR CONSOLE ROUTINE (VMR)

VMR -- User D-space not supported

**Explanation:** An attempt was made to install a task with separate instruction and data space on a system that does not support user D-space. (User D-space is a system generation option.)

VMR -- Virtual terminal error

**Explanation:** You attempted to enable, using the SET command, a terminal option for a virtual terminal.

VMR -- Write check not supported for device

**Explanation:** You attempted to enable write checking for a device that does not support it. Write checking is supported for all disks except RL01s and RL02s (DL:) and RX01s (DX:).



# RSX-11M-PLUS RESOURCE ACCOUNTING

OCT	DEC	
0	0	B.LNK
2	2	B.TYP
4	4	B.LEN
		B.TIM
12	10	B.UID
16	14	B.ACN
20	16	B.TID
22	18	B.DNAM
24	20	B.DUNT
		UNUSED
26	22	B.DLEN==.

ZK-603-82

## Dismount Device Transaction Block

OCT	DEC	
0	0	B.LNK
2	2	B.TYP
4	4	B.LEN
		B.TIM
12	10	B.UID
16	14	B.ACN
20	16	B.TID
22	18	B.TOLD
30	24	B.TNEW
36	30	B.TMLN==.

ZK-604-82

## System Time Change Transaction Block



# RSX-11M-PLUS RESOURCE ACCOUNTING

OCT	DEC	
0	0	B.LNK
2	2	B.TYP
4	4	B.LEN
		B.TIM
12	10	B.UID
16	14	B.ACN
20	16	B.TID
22	18	B.PNAM
30	24	B.PPGS
32	26	B.PNFI
34	28	B.PFRM
36	30	B.PPRI
40	32	B.PDEV
41	33	B.PPUN
		B.PLEN

ZK-605-82

## Print Despooler Transaction Block

OCT	DEC	
0	0	B.LNK
2	2	B.TYP
4	4	B.LEN
		B.TIM
12	10	B.UID
16	14	B.ACN
20	16	B.TID
22	18	B.LUIC
24	20	B.LNAM (15. bytes)
43	35	B.LLEN==.

ZK-606-82

## Login Transaction Block



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